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Journal of the Society of Arts.

FRIDAY, MARCH 16, 1866.

Announcements by the Council.

ORDINARY MEETINGS.

Wednesday Evenings, at Eight o'clock:—

MARCH 21.—"On Deer Forests and Highland Agriculture in relation to the Supply of Meat." By Professor LEONE LEVI.

MARCH 28.—*Passion Week.*—NO MEETING.

CANTOR LECTURES.

A Course of Lectures by Dr. F. Crace Calvert, F.R.S., will commence in April. Particulars will be duly announced.

NATIONAL PORTRAIT EXHIBITION, 1866.

Season Tickets for this Exhibition are now ready, and may be had at the Society of Arts, on application to the Financial Officer, price £1.

Proceedings of the Society.

MUSICAL EDUCATION COMMITTEE.

The Committee met on Wednesday, January 24th, 1866; present, Henry Cole, Esq., C.B., Sir John E. Harington, Bart., Colonel Scott, R.E., and Edgar A. Bowring, Esq., C.B.

Dr. STERNDALE BENNETT, Professor of Music in the University of Cambridge, examined by the Committee.

680. You are a director of the Philharmonic Concerts?—Conductor.

681. How long have you been so?—Ten years.

682. And before that time you received your musical education in the Royal Academy of Music?—Long before that time.

683. For how long were you at the Academy?—About ten years. I should add that I was scarcely ten years of age when I first went to the Academy.

684. Do you recollect the precise period during which you were at the Academy?—From 1826 to 1836.

684*a*. Living in the house?—Yes; during the whole ten years.

685. Besides being a student in the Academy, were you subsequently a professor there?—Yes.

686. Was not ten years an unusually long time for a pupil to remain at the Academy?—Yes, it was; very few remained so long, though some remained eight or nine years.

687. Were there special circumstances which induced you to make so long a stay?—I had no wish to leave, and they kindly kept me there.

688. At your own expense, or that of the Academy?—At the expense of the Academy entirely.

689. In respect both of living and tuition?—In both respects.

690. Are you acquainted with the present state of the Academy?—I have ceased for some years to take any active part in the institution.

691. Are you aware whether any or many changes have taken place since you were there?—When I left the Academy as a professor there was, I believe, a board of professors, but it did not keep together very long. After the death of Lord Westmoreland, it was reconstructed by the new principal, Mr. Lucas, but whether it now exists in any shape whatever I cannot say.

692. During your time at the Academy as a student there was a board of professors?—The board of professors was instituted many years after I left the Academy as a student. I was a member of the first board, and I believe I was the first to leave it.

693. During the time you were there as a student what was the management, broadly speaking?—There was a superintendent (a clergyman) resident in the house, and the committee were very active at that time, and performed their duties very well as far as I could understand.

694. That committee being composed of laymen?—There were no professional men on the committee.

695. With respect to the board of professors of which you have spoken, what were the relations between them and the committee of management?—The committee left with the board of professors the arrangement of the classes and the examination of the pupils, and the Board of professors gave general advice upon musical matters.

696. Are you of opinion that the introduction of that board of professors was an improvement upon the state of management when you were there as a student?—Very great.

697. You think it did something that was wanting?—It was a link between the committee and the large body of professors.

698. With that board of professors there was a principal as well?—Yes.

699. Who had more power than any one member o the board?—Not exactly that; he would take the chai at the meetings of the board.

700. Had he a second vote?—I do not recollect as to that.

701. Would it have been his duty, in the event of the absence of a professor unaccounted for, to call him to account?—That would have been done through the board of professors, I apprehend, as long as it existed.

702. How often did the board meet?—Once a week.

703. And they went into the question of the attendances of the professors themselves?—I should say that any formal complaint on the part of a pupil, or parent of a pupil, of inattention or absence of a professor, would have been brought before this board.

704. And then reported to the committee of management?—If necessary.

705. Do you happen to recollect what led to the abolition of this board of professors?—I do not. I was the first to leave it because I felt, having given over certain powers and duties to the board of professors, the committee of management sought very much to limit and control those powers. I left the board a good deal on that account. I thought there was so much good in the board of professors, that when I saw that what was suggested by them was not carried out I withdrew, as I considered I was wasting my time.

706. Since the power has been resumed by the committee of management is it your opinion that the Academy has become improved or otherwise?—I cannot give an opinion.

707. Is it your opinion that the present state of the Academy is as satisfactory as it was during the ten years you were there?—There should be more exhibition of musical talent, I think.

708. Broadly speaking, do you consider the Academy to be in a satisfactory position at the present time?—No; I do not.

709. Did you assist as a teacher in the Academy after you left the board of professors?—I believe I did for a

short time. I have since been more than once invited to rejoin the Academy, but could never see my way clear to doing so.

710. Did the board of professors come into relation in any way with the committee of management?—Yes, they did. The minutes of what was done by the board of professors would be laid before the committee.

711. Of which Lord Westmoreland was the chairman?—Yes; his lordship, I should say, took the most active share in the management.

712. Had the committee power to overrule the decisions of the board of professors?—Yes.

713. On professional points?—On all points.

714. The committee, though not themselves professors of music, had it in their power, and might, and perhaps did, overrule the professional judgment of the board of professors?—I am quite distinct upon that.

715. Since your time have the fees for pupils in the Academy been raised?—They were raised, I fancy, about three guineas.

716. You are aware that the fees at present are thirty-three guineas a year, or for the three terms?—Yes. Formerly, I think, the indoor pupils paid £50 a year, and the outdoor ones £30. It was found that there were not sufficient indoor pupils to pay the expense of an establishment with proper officers and servants. I, for one, advised that the boarding of the house should be given up, but to this day I very much regret that it was obliged to be done. Owing to the loss it occasioned them when they came to have outdoor students only, I think the three guineas were added to the fee, and it was then I believe that the division of the year into terms was established for the first time.

717. Will you give the committee your opinion as to the propriety of boarding and lodging the students in the Academy?—Well, I think there was much more real work done when the students were in the house. I have reflected much upon the point of the residence of students. I think it worthy of the deepest consideration. It is within my knowledge that many students have left the Academy on account of the time that is lost in going to and fro. Worse still, they arrive in a flurried and excited state from passing through the streets of London, and anxiety to be punctual, and are comparatively unfit to take advantage of their lessons, and by the time they get home again they are equally unfit for practice.

718. Do you not think by proper arrangement and organization that loss of time as well as physical inconvenience which you speak of might be reduced to a very considerable extent?—Yes. I believe the present Academy has done much in this direction, but it is a sword that cuts two ways. You can arrange for pupils to receive their two or three lessons on the same day; but is this a good plan? It seems to me a very fatal practice, especially as regards lessons in composition. The pupil ought to have time to go and reflect on what the master has told him during his lesson, and it ought not to be driven out of his head by lessons on the violin or some other instrument immediately after.

719. What led to the giving up of the lodging and maintenance in the house?—They simply could not afford to do it. They had so few pupils in the house it did not pay.

720. So few paid the fees for board and lodging?—Yes.

721. Is not that to your mind some proof that the parents of students find it more economical to take on themselves the charge of board and lodging rather than pay the institution for it?—The Academy found they could not afford to do it in the way of board and lodging pupils.

722. Notwithstanding they were doing it at a loss, still the students could not afford to pay the charge. Do you think there were other causes which prevented students coming in sufficient numbers to pay for the board and lodging? and is it to be inferred from your previous answer that the more boarding students they had the more the loss to the academy was?—Not altogether so; they had not sufficient students indoors to pay for a household; if they had had more it would have paid them better up to a certain point.

723. To what causes do you attribute the decline in the number of students coming to the Academy which led to the loss?—I could never find that out.

724. Are you aware that at the Paris Conservatoire there are between 600 and 700 students, very few of whom are boarded in the house?—I did not know that; nevertheless, I think if the Academy were in London, or near it, great stress should be put upon requiring the pupils to reside in the house.

725. Do you not think that could be met by arrangements which would enable the students to arrive at the Academy at an early hour in the morning and leave at a late hour, and by providing means for taking their meals in the house without sleeping there?—That would be better, no doubt.

[The Chairman explained the system in this respect which is adopted in the Art Training Schools at South Kensington.]

726. Would some such arrangement as that meet your views as regards the avoidance of excitement and physical fatigue?—Yes, it might; and if you could go further and allow a proper interval between the lessons it would be of great importance.

727. You are aware that of late Parliament, in its benevolence to music, has given a grant from the funds of the state of £500 a-year?—Yes.

728. Do you approve of that?—I should like to see it a great deal more.

729. Is it your opinion that a lay superintendent—lay *qua* music—was of much importance in your time?—He, of course, took entire charge of the conduct of the students, and the management of the institution generally.

730. At the Paris and most other foreign Academies, there is an officer who is styled the director, who is a professional man. There is M. Fétis at Brussels, Auber at Paris, and other men of that class elsewhere. It is that class of men who you think ought to be charged with the whole direction of the business of the Academy?—It would not, in my opinion, be strictly necessary to have any one so eminent as M. Auber in the position of director or keeper, but any person in this position must at least have the confidence of the public, and be a thorough musician—able to enforce the musical discipline, and perform general musical duties.

731. We have had two sets of opinions given to the committee on what may be termed the professional direction of the Academy. One opinion is that the director shall be a professional man of great common sense, and at the same time of the highest professional ability that could be acquired. The other opinion rather points to the oligarchical management of a board of professors: have you made up your mind to which system you would give the preference?—I think there should, in the first instance, be a committee of management, consisting of non-professional gentlemen, who would take charge of the institution generally, and attend to all financial matters. These duties could never be properly done by purely professional people. After this committee should come a board of professors, who would preside over all matters strictly musical; and with this board there should be connected a resident principal or keeper. Of course the principal and board of professors must, in some respects, be subordinate to the committee of management.

732. Subordinate in the question of expenditure, but not in the management of the pupils, as respects the instruction?—Exactly.

733. Would you wish to have a superintendent of studies, as they have abroad, besides what is called now the principal?—The offices might be vested in one and the same person.

734. The practical question is, whether the manage-

ment of the Academy, so far as the instruction and the daily conduct of the school is concerned, should be in the hands of one individual or entrusted to a board of some number; which of the two plans would you recommend?—My idea was to have both. I did not mean to give this director absolute power. I think in the absence of the board of professors there should be a musician fixed there.

735. Who is to see that the professors and students do their duty?—This very person I speak of. He should always be on the spot when any music is going on.

736. Is it not the case that since you were at the Academy the premises have become very much deteriorated?—Very much so. They were repaired some years ago, but the play-ground has been entirely taken away. It was formerly really a very pretty place.

737. Do you know that the Royal Academy have received notice to leave the present premises?—I only read it last night.

738. Assuming that to be the case, have you any suggestion to offer to the committee as to what should be done in this dilemma?—I have often wished we could have an institution a little way out of London. My own idea is that London is not the proper place for it.

739. What are your reasons?—From the excitement of the place and the long distances, and looking to the greater ease with which the thing could be carried out.

740. The greater elbow-room?—And the less cost.

741. Do you think the advent of railways in London would make it easier?—Certainly.

742. Are you aware that the Royal Academy made an application to the Royal Commissioners of the Exhibition of 1851 to give them a site at Kensington?—I heard of that.

743. Should you think that a good site?—I should think it one of the best in London, but I should like to take them out of London.

744. That would involve the other part of your scheme of living in the house?—Yes.

745. If out of London, how would you arrange about the professors?—I do not conceive much difficulty about that. You will find upon enquiry that a great many eminent professors attend, for extra studies, the public schools, such as Eton, Rugby, Wellington College, &c. Make fewer professors and give them more work, and they will follow you anywhere. Brighton is visited daily by eminent London masters. I myself spent a whole day professionally once a week at Brighton for nine years.

746. Are you aware of the very great number of professors at present attached to the Royal Academy of Music?—Yes: I have seen the list. I think that has been a great mistake.

747. You are of opinion that fewer active professors, attending well to their duties, are better than a great many who do not attend?—Far better.

748. Are you aware from what circumstance this large number of professors has arisen?—No doubt it is thought an advantage to be upon the list.

749. Not to the Academy?—No; certainly not, to have so many.

750. Mr. George Macfarren suggested the advantages which would arise from the practice of church choral music, and also suggested the desirability of having a chapel attached to the Academy as affording a favourable opportunity once a week of giving good choral music. Does that suggestion strike you as being of value?—Anything which tends to the cultivation of Church music must be desirable in an institution of that kind. I cannot pretend at present to say how it could be carried out.

751. You would be in favour of having a proper concert room?—By all means.

752. And a small theatre?—If possible. At Leipsic they have a very nice concert-room for the students; a performance by the students in their concert-room was arranged purposely for me last January twelvemonth.

753. Have you had an opportunity of reading the evidence which has already been given before this committee?—I have read Mr. Chorley's and Mr. Macfarren's evidence.

754. Have you any observations to favour the Committee with upon the evidence you have read?—No; but I am anxious to recur to my opinion upon the point of the pupils living in the house, and in that case I should take them a little way out of London.

755. Supposing it should be impracticable to raise a scheme for their residence in the house, you would be content with the best arrangements that could be made to afford them the utmost personal comfort during the day?—Yes; at any rate to give them more time at the Academy than they have now.

756. To keep them at the Academy the best part of the day?—Just so.

757. As any kind of Royal Academy would, in some measure, have to depend either upon the liberal assistance of Parliament, or the good-will of the public, besides the receipt of fees from the students, do you not think that an institution within the suburbs of London would be likely to excite more public interest than one removed far distant from the metropolis? Do you think that any concerts given by the Academy, as showing the progress of the pupils, would be so largely attended if they took place twenty miles away?—I do not know about that. There is the Crystal Palace. The public go to concerts there in great numbers; and it is the same on speech day at Eton, Harrow, Rugby, Wellington College, and many other places.

758. It is to be inferred from the views you have expressed that you desire to see the Royal Academy an effective and hard-working institution?—Yes.

759. And as a means to that you think residence in the house would afford great facilities?—Yes; and I am not anxious for a large number of students at a time, nor to give the Academy a popular tone.

760. What should you consider a large number of students?—That I have not thought of. I should think 40 or 50 young persons at once, but all intended by nature to become musicians.

761. You would not limit it to male students?—I see the difficulty of providing residence for female students.

[The CHAIRMAN explained that out of the 600 students in the Art Schools 350 were female and only 250 males.]

762. Do you not think there would be dissatisfaction on the part of the public if the Academy were not freely opened to both classes?—Oh, yes; I see that.

763. Do you desire to see a good musical library?—Very much.

764. And perhaps a museum of musical instruments?—Also.

765. You would desire, if possible, that the institution at the Academy should be throughly complete in all its branches, and with all instruments?—By all means.

766. Should you prefer to see the present Royal Academy of Music improved or extinguished by a new institution?—I should for many reasons desire to see the present Academy improved. I should say an institution, whatever may be its present state, cannot have existed for 40 years without having established some ground.

767. There would be some advantages from its age and experience?—There must exist throughout England the traditions of good teaching. When I was a student at the Academy, I remember among the eminent people, J. B. Cramer, Moscheles, Spagnoletti, Kiesewetter, Lindley, Crotch, Attwood, Goss, Crivelli, Mrs. Anderson, Potter, all in active work as professors in the institution. The influence of such teachers cannot easily be lost. There are a great many old students of the Academy both in London and the provinces who are never before the public, but who are doing their work thoroughly well, and these are much more likely to prepare pupils for their old Academy than for a new one.

768. You do not sympathise with the opinions expressed as to the expediency of abolishing the present

Academy and starting *de novo*?—I would rather see the existing Academy improved.

769. You think it capable of improvement?—Quite so.

770. Beyond what you have stated, is there any other point respecting its improvement you would wish to lay before the Committee?—I agree with those who have spoken of the orchestra. It has gone down for some years. When I was a boy I could take down a MS. concerto, and play it with a complete orchestra, always to hand.

771. Do you consider the Royal Academy might have useful relations with the various local institutions that promote music throughout the provinces, either in the way of receiving pupils from them, or in conducting local examinations?—Yes. I think so.

772. You think it might fairly be in a position to be the head-quarters of the music of the country?—It should be.

773. And in friendly relation with everybody?—Yes.

774. Are you aware whether the Royal Academy has ever studied military music?—I know some of the bandmasters were educated at the Academy and have become good musicians; but educating a bandmaster and educating a band are very different things. If I had to make up an orchestra for the Royal Academy, rather than take the responsibility of educating military bands, I would employ the band masters to do it. I do not see that it would be an improvement for the Academy to undertake the education of military bands.

775. Are you aware of a plan which has been adopted by the Marquis of Salisbury of apprenticing lads to the master of the band, and keeping them for a number of years, by which means the Hertford Military band is one of the best in the country?—I was not aware of it, but am very glad to hear it.

776. You approve of that system?—Yes, very much so.

777. It is understood that some of the best performers in the Guards' band have been obtained through the sort of military musical school which the Marquis of Salisbury has been the means of promoting?—I am very glad to hear anything of that kind.

778. Do you think the present fees of the Royal Academy are too high or not?—By no means. I think, if anything, they are too low.

779. You think 33 guineas a year too low?—I should say the fees are not high enough, as payment for three or four separate branches of study.

780. Do you consider there should be free scholarships as at the universities?—Yes; I should like to see as many free scholarships as possible. I took great personal trouble in establishing the Westmoreland Scholarship.

781. Are you aware that there is now great complaints against the fees being too high, and that there is difficulty in getting pupils to pay those fees?—I think the complaint is unjust. The institution could not have existed up to this time if more than nominal fees had been paid to the professors.

782. Assuming for the instant from some outside source, not the fees of the students, that a revenue could be obtained sufficient to maintain, say 40 students with gratuitous education, should you think it desirable to establish fees so high as at present, it not being necessary for the adequate payment of the professors?—I should take care that the terms were pretty high, because you must stop ignorant people from coming in.

783. You would exact the test of competency, even though a high fee were demanded?—Yes.

785. But assuming a very competent person applied for admission, and assuming the number of free students to be full, should you feel disposed to take that student at a high or a low fee?—I should be sorry if a place could not be found for such a student; but a line must be drawn.

785. Your effective scholarship being filled, and there being room in the Academy to take in a very competent person, would you think it right that such a person should be debarred from entering the Academy by the imposition of a high fee?—If the free scholarships were filled up it would be a piece of misfortune for the candidate.

786. You would impart some test before any student was admitted either at a high or a low fee?—Most certainly. That is the greatest security we can have.

787. You think it essential, for the well-being of the Academy, that it should not be dependent upon high-paying students, but that it should be adequately endowed?—In the first instance it should be, no doubt. The Academy for the last few years may be said to have been living from hand to mouth. In its present state the fees of the students are not sufficient to carry out the institution with anything like efficiency. If it had not been for the liberality of the professors, I think it must have been closed some years since.

788. High fees are avoided on the Continent?—The Academies are endowed by the state.

789. On the assumption that the Academy is put on this amended footing which you think desirable, do you consider it of importance that a theatre should be attached to it?—I should think it of great advantage.

790. With dresses and scenery to a limited extent?—It would be an advantage, no doubt, to pupils training for the stage. The present Academy had public performances of Italian operas some years since, and on one occasion I played Cherubino in "Le Nozze di Figaro."

791. Do you think students, while students, should be encouraged in public performance, or do you think the audience should be limited to the friends of the institution and the pupils?—I am not in favour of students being too early accustomed to public performances. That is all included in part of my scheme for taking the Academy out of London itself. I do not like to see them too soon in the concert-room.

792. You would perhaps go as far as to prohibit students from performing in public for remuneration till they quitted the Academy?—In nine cases out of ten they appear much too soon.

Mr. Ernest Pauer examined by the Committee:—

794. You have been many years in this country?—Fourteen.

795. For how long have you been a professor at the Royal Academy of Music?—I have been so for six years.

796. The instrument you teach is the pianoforte?—Yes.

797. How many pupils have you in the Academy?—When I began I had nine. In the third year I had five, and for the last two or three years I have had only one.

798. Notwithstanding which your private practice may have increased rather than diminished?—Yes.

799. You do not attribute the decrease of your Academy pupils to the increase of your private pupils?—I could not say so.

800. The public have appreciated your instruction, but for some reasons the pupils of the Academy have not increased in number?—They have not. I had the highest terms the Academy could afford to pay; but even at those terms it was for me a great sacrifice. I was, therefore, not over anxious to get pupils at the Academy.

801. As, even at the most flourishing period of your teaching, the number of pupils did not appear to be very great, do you conceive there was any good reason for having two or three other professors of the pianoforte besides yourself?—I consider there are just two-thirds too many professors in the Royal Academy at the present time.

802. You do not consider that the professors are proportioned to the demands of the students, but quite independently of that demand?—Decidedly. The title of professor of the Royal Academy may be considered, perhaps, as carrying some *éclât*, and it might be very nice to print it on a visiting card.

803. In point of fact it would seem that the tendency is rather to create professors than students?—I could almost have undertaken the whole of the pianoforte pupils, with the co-operation of M. Goldschmidt and another professor.

804. Do you think it is generally regarded as a distinction to be a professor of the Royal Academy of Music?—At first I considered it so, when it was offered to me, and I tried to do justice to it.

805. It has been the practice to allow the old pupils to teach in the Academy as much as possible, has it not?—Yes.

806. For the satisfaction of the teacher rather than that of the student?—One might suppose so. It was a kind of protection which it gave to the name. They are called sub-professors. I think this arose from the fact that the attendance of pupils was so small, and the sub-professors were obliged for some time to teach gratuitously.

807. You mentioned just now that professors liked to put that title upon their cards; from that it is to be presumed that the professors regard the Academy as having established a certain position as an Academy of Music, and that it is considered by them a mark of distinction to be professionally connected with it?—Yes; it ought to be so, certainly. Every man would be proud of it if the Academy were what it might be.

808. How many pupils are there at the Academy at the present time learning the pianoforte?—I think there are about 28 or 30.

809. And how many professors and sub-professors are there?—Counting all upon the list, between nineteen and twenty-one. I quote from memory.

810. That would not be quite a pupil and a half to each professor?—About that. I may presume the number has been increased of late, because two of my pupils have been appointed professors.

811. Do you not think that is a system which is calculated to divest any competent professor of all proper interest in his work?—Decidedly; it takes away a great part of the interest.

812. You would think it necessary, in reforming the Academy, that the principle should be to apportion the teaching to the demand for it, so that each professor should receive the payment that is right and sufficient, and that no more professors should be appointed than are absolutely necessary?—If you will allow me to state, I have thought often and deeply about it. My experience in observing other Academies has shown me that the best plan is, for such a leading instrument as the pianoforte or the violin, that there should be one principal professor, who should be held responsible for all the teaching of that particular instrument. He should also be responsible to the director, who never ought to teach. As Professor Sterndale Bennett says, "he ought to be at the Academy as much as possible," to be in the house to see that the professors and pupils generally do their duty. As all the examinations are made publicly, it will be seen by the examinations whether he has devoted his attention and trouble to his class or not.

813. And all the other teachers should be under the authority of the head of each department?—Yes. After so many years' experience as we have had we may come to the conclusion that there is a certain system of music which should be taught. If there are too many teachers and too many different systems, you bring about confusion. I have made the observation in the Academy that the simplest technical objects have been unknown to the pupils. Some of them could not play minor scales in thirds or major scales in tenths. In fact, the elementary ground work has been greatly overlooked.

814. Are there at present any professors without pupils?—I have only just arrived from abroad; and as I had last year only one pupil, I might this year be without one at all.

815. Can you favour the committee with any practical suggestions for the better organization of the Academy, and what you would wish to see carried out there?—First of all I would ask for a grant of £10,000 from Parliament; then to have one responsible director who should be wholly independent, and whose salary would place him in such a position that he need not undertake any other office which might encroach upon his time.

816. He should devote the whole of his time to the business of the Academy?—Most decidedly. He would gain a social position which has hitherto been quite unknown amongst us musical people in this country. Then there should be for singing, composition, the pianoforte, the violin, the organ, and perhaps for other most important instruments, a staff of the most competent professors, who would be head masters of their classes and responsible for the teaching.

817. Do you mean one head professor for each instrument?—Most decidedly, for each principal instrument; also for singing and composition. The examinations would show whether the first professor was competent or not. There should also be a vice-director, to carry on the functions in the event of the director himself being unable to do so from illness. This post could be supplied by one of the head masters, provided he were elected annually.

818. Such an organization as you have sketched implies that a great number of the present professors and others now connected with the Academy would be dispensed with?—Decidedly; but there would be no loss by that. Without wishing to say anything derogatory to anyone, I think there are a great number of very moderate teachers at the Academy.

819. The pupils you have taught have been successful in the competitions?—Most successful.

820. And notwithstanding that they have got down to zero in number?—Yes; but I do not mean to say there was any ill-feeling against me. I do not know how the circumstance arose, myself. I have always been on the best terms with every one in the Academy.

821. You spoke of the position of the director or principal. Do you happen to know what salary is paid to the principal of the Academy in Paris?—I am not aware of that, but I should not think the sum is a very high one.

822. Should you suppose it would be £800 a-year?—I could not tell. It is very different abroad: Auber makes a large income every year by the *tantième* of his operas.

824. What should you think ought to be about the sum in England?—A man of position, with the style of living in this country, I should say would not accept such a post under £1,000 a-year. Going on to the remuneration of the professors, I think the most eminent talent could be secured for the Academy on proper economical terms, provided a sufficient amount of work during the year were secured to each professor, and if the engagement were a permanent one.

The Chairman explained that in the Art Training Schools the practice had obtained for many years with considerable success of giving to each permanent teacher a graduated amount, made up partly by a fixed salary, and partly by a share in the fees of the pupils. The result of that system in the case of the principal had been that his income had been increased nearly threefold; and the whole of the professors and teachers were entirely contented with the arrangement.

825. (To the witness.) Do you think some such plan as that would be applicable to the Royal Academy of Music?—Yes; I think it would work quite as well.

826. You have had experience of several of the foreign academies?—Yes.

827. Which do you consider to afford the best models?—Leipsic and Stuttgart are very good academies. At the latter the pupils pay an amount equal to £8 10s. per annum only.

828. Have those institutions any public grants of money?—At Leipsic I think there is a grant from the town, at Stuttgart from the King.

829. What would be about the average number of pupils at Stuttgart?—I should think about 130.

830. All paying this £8 10s. a year each?—Yes.

831. Are there any free exhibitions?—No; that is a price which all can pay.

832. Is the course of instruction complete?—It teaches everything, and they turn out very good pupils.

833. Are you aware how many pupils there are on an average at Leipsic?—The exact number I could not state, but they are always very full. There were last week as many as 15 to 20 students who spoke the English language, but these might include some from America.

834. In mentioning the fees paid by the students of £8 10s. a year, it may be inferred that the fees paid to the masters are very much less than would be given in England?—Yes, of course. In Vienna the largest amount paid to a master is 6s. per lesson; many professors have only 4s. In the central parts of Germany the payment is one florin per lesson only; exceptionally one thaler (3s.).

835. For a competent teacher?—Yes.

836. In point of fact, looking at the difference of prices in the two countries, the £8 10s. paid at Stuttgart would be represented by many times that amount in this country?—It would be so, no doubt.

837. You have heard the evidence which has been given to-day by Professor Bennett?—Yes, I have.

838. Do you concur generally in the opinions he has expressed?—Yes, very much so. I admired sincerely the way in which he spoke of the Academy and the difficulties which I conceive to exist there.

839. Have you any strong opinion with regard to the pupils living in the Academy?—I think I approve of the plan which the Chairman of the Committee has put forth rather than that of Dr. Bennett. If it could be managed, it would be very desirable that the pupils should remain in the Academy during the whole day, but I think there would be very great difficulties in the way of living in the house entirely.

840. You are aware that the Royal Academy is about to quit its present premises?—I heard of it.

841. And also that it has been proposed to build new premises?—I have heard so.

842. The building of new premises will necessarily occupy a long time; should you think it most expedient to try and get temporary accommodation of a humble character, or to suspend the instruction of the Academy till the new premises were provided?—According to my own opinion, it ought to be carried on by all means, even with discomforts in the accommodation; because the suspension of it might tend to let it fall into comparative oblivion.

843. You would prefer accommodation of the humblest character to entire suspension of the operations of the Academy?—Decidedly.

844. You would prefer to continue the present management of the Academy, bad as it is universally acknowledged to be, sooner than, for a certain definite time, give up the Academy altogether?—Yes; because you might introduce some improvements which might work well.

845. You think the seeds of better management might be cultivated?—Most decidedly.

846. As the Academy in Hanover-square will be virtually broken up at Midsummer next, it may be necessary to give notice to everybody connected with it that their services will be no longer required. Should you consider such a course prejudicial or otherwise to future arrangements?—I should not consider it very prejudicial, because you would be certain to retain the most efficient persons.

847. But whether the Academy be temporarily located in humble quarters or not, you would use that opportunity for a complete change of system if possible?—Yes, decidedly.

848. And you would put the management into the hands of one competent person, he having the power to engage the necessary assistance for carrying on the work of the Academy in its transitional state?—No doubt there must be a kind of despotism during that state; otherwise the thing would vanish.

849. Do you think that a director, with ample powers, or a board of professors would be the best as an organ of management?—I would have a director, solely responsible. I think the less you have to do with committees of management the better.

850. As far as you had opportunity of observing the working of the board of professors, you think its action was not beneficial?—I do not think to the extent one might have expected.

851. Your opinion is that if the public want good music the providing of it ought to be assisted to a considerable extent by the funds of the state?—Decidedly; at least for some time.

852. And you cannot expect the musical talent of the country to be properly trained unless the public are content, in some form or other, to pay for it?—Just so; but I think once an Academy of Music was working well, there would not be for a long time much need for Government support, because the generosity of the great public is such in this country that I think ample funds would be provided; but the surest way would be to secure an adequate Government grant, if possible. It, might, however be the case that, if liberal public support were given to the Academy, the Government might withhold its grant.

853. The plan of appealing to the benevolence of the public has been already tried for several years with respect to the Royal Academy. At the present time the funds required are nearly exhausted. Do you thing an institution of this kind ought to be dependent upon such accidents, or do you thing it would be better to have a proper public subsidy, with a proper Parliamentary responsibility for seeing that the thing was well and properly carried out?—That is the only plan you could depend upon for the success of the institution, because the Government subsidy would in itself tend to raise the character of the institution and give it a higher standing, and it would give to those officially connected with it a higher social status than musicians generally have hitherto enjoyed in this country.

854. You think it of advantage that musicians should have that recognition?—Decidedly. It would tend to raise the standard of the musical artist.

855. And you think in a parliamentary supervision you have the best security for the proper conduct of the institution?—There are now so many musical Members of Parliament that I think they would take interest in it. On the subject of the general management of the Academy, Mr. Pauer remarked, that in his opinion the best professors, English and foreign, should be engaged for the teaching. The director of the Academy should, if possible, be an Englishman, but some of the head professors might be foreigners. There are distinguished foreigners in this country who are exceedingly clever men,—such as M. Panizzi, late of the British Museum, M. Costa, and others, who understand the feelings both of Englishmen and foreigners. It is quite a wrong notion to say that foreigners, as a rule, are more musical than the English people. That was a very fallacious idea. He had been fourteen years in this country, and he had had during that time pupils who had shown as much musical talent and taste as any he had met with abroad; and the delight which the English people take in music, and which they show in the pecuniary support of societies, is almost greater than is the case on the continent of Europe. He did not speak of London alone in this respect, but throughout the entire country; and the same remark partly applied to Scotland and Ireland. It was especially the case in the great provincial towns of Liverpool, Manchester, Bradford, &c., and also in Dublin. The funds the Philharmonic Societies of London, Liverpool, and Manchester enjoy are unknown abroad. This was, therefore, the proper time to give the English musician weight and position.

He had no position now. Having been invested by his Sovereign with the order of Francis Joseph he was privileged to attend the Court at Vienna, but in England the musician generally enjoyed no social distinction.

(By the Committee.) If free to have your own way, would you take the Royal Academy of Music as the basis of a new and improved institution, or would you attempt to create a new one in opposition to it?—I would not accept the Academy as a model for the institution, but would try and retain everything which is good and has worked well, but I would not be too delicate in reconstructing the institution after the model of the old one.

856. You have no objection to the present name?—Not at all, as I think it the only good one.

857. And would you keep what funds they have?—I believe they have not very large funds.

The following are the replies of Mr. A. F. Godfrey, bandmaster of the Coldstream Guards, to some of the questions issued by the Committee:—

Q.—3. What is your opinion as to the expediency or otherwise of taking the present Royal Academy of Music as the basis of any enlarged institution in this country?

A.—Although it is my opinion that material improvements might be made in the administration of the Royal Academy of Music, yet I consider that the basis of that institution is superior to that of any other in this country.

Q.—4. What improvements might be effected in the Royal Academy of Music?

A.—Arrangements might be made for giving greater publicity to the compositions of students; and much more frequent choral practice would, in my opinion, be conducive of very beneficial results. These choral exercises have been attended with great success in some of the foreign Conservatoires.

Q.—5. Is any union between the Royal Academy and similar schools, cathedral choirs, or local institutions desirable or otherwise?

A.—The constitution of most of the local institutions is, I believe, so similar to that of the Royal Academy of Music, that I do not know of any particular benefits which would arise from a union of them. As regards choirs, however, I think that great advantages would be gained by them by being connected with the Royal Academy of Music, for the following reasons:—Cathedral choirs have only opportunities of practising one kind of music, whereas, by being connected with the Royal Academy, they would be enabled to study music in all its classical branches, as well as theoretically. In addition to this, by performing at the Royal Academy concerts, they would acquire the knowledge of singing with orchestral accompaniment, and at the same time be a valuable acquisition to those performances as a trained chorus.

Q.—7. Does the Royal Academy in any way promote the improvement of military music?

A.—No; as the professors generally have no opportunities of becoming acquainted with the orchestration of military music.

Q.—8. Could any useful connection be established by the Academy with the regimental volunteers or other trained musical bands?

A.—I do not think that any such connection would be desirable or necessary, as the institution at Kneller Hall is strictly confined to the training of military musicians.

Q.—10. What is your opinion respecting—(*a.*) The advantages derivable from public concerts. (*b.*) The test of musical proficiency by examinations. (*c.*) The formation of a national musical library, and of a collection of musical instruments by gifts, loans, &c. (*d.*) The competitive trials of performers and of musical instruments. (*e.*) The use of a standing musical jury, as in the French Institute.

A.—(*a.*) Public concerts are beneficial to musical academies in the following ways:—

1st. The students acquire confidence by performing in public, such as they cannot obtain by private rehearsals. In this respect they are very desirable for solo performers.

2nd. The compositions of students might be performed at these concerts.

3rd. These concerts would benefit the funds of the institution.

(*b.*) The proficiency of a student as a theoretical musician or a solo performer may be ascertained by personal examination; but his capabilities in orchestral performance can only be tested by his co-operation with an orchestra.

(*c.*) I think that such a collection would be very valuable to musical students.

(*d.*) With respect to competitive trials of performers I feel very doubtful of the results. As regards the competitive trials of instruments, such trials have taken place at both our International Exhibitions; but besides these public trials a brisk competition constantly exists between manufacturers, which is obviously of great benefit to musicians. This competition might, however, be augmented by public trials before properly constituted juries.

(*e.*) I think that such a jury would be productive of highly beneficial results to the musical profession, one of the most important of which would consist in their deciding on the merits of the works of English composers.

Fifteenth Ordinary Meeting.

Wednesday, March 14th, 1866; Alexander J. Ellis, Esq., F.R.S., in the chair.

The following candidates were proposed for election as members of the Society:—

Chubb, Harry, 33, John-street, Bedford-row, W.C.
Myers, William Henry, 302, Whitechapel-road, E.
Webb, John Stephen, 34, Cadogan-place, S.W.

The following candidates were balloted for, and duly elected members of the Society:—

Abbott, Joseph William, 163, New Bond-street, W.
Brown, Allan McLaren, 269, Camden-road North, N., and Marlee, Blairgowrie, Perthshire.
Condy, Henry Bollman, Devonshire House, Battersea, S.W.
Lomax, J. J., Proprietary School, Hereford.
Stepney, Cowell, 9, Bolton-street, W.
Tabraham, Robert, Bellevue House, London-road, Worcester.
Walker, Robert, 10a, King's Arms-yard, Moorgate-street, E.C.
White, Henry Nathaniel, 83, Albion-road, Dalston, N.E.

The Paper read was—

ON VISIBLE SPEECH; OR, A UNIVERSAL AND SELF-INTERPRETING PHYSIOLOGICAL ALPHABET.

By Alexander Melville Bell, Esq.

The subject of visible speech comes fairly within the province of the Society of Arts; for, of all arts, writing, or the representation of language, may claim to be among the first in importance to mankind. Writing is, in its nature, a kind of "visible speech;" it certainly was originally intended to be so; but we have only to place a page of French, Italian, or Portuguese before an English reader, to discover how very far writing is from fulfilling the purpose of making speech "visible." Although these languages are all written in the same alphabet as English, the reader's knowledge of the letters will not enable him to pronounce the foreign combinations in such a manner as to make the words intelligible to one who uses them vernacularly.

A system of letters which, when learned in connection with any one language, would be vocalised with uniformity in every other language, has long been felt to be one of the great wants of the world; and many scholars have laboured at the construction of such an alphabet. But there were insuperable obstacles to success; first, the association between letters and sounds was only arbitrary; and, secondly, international uniformity of associations was impracticable, because the sounds of different languages, and their mutual relations, had not been ascertained with exactitude or completeness. All attempted collations of existing alphabets, consequently, failed to yield the elements of a complete alphabet; and no other mode of attaining a universal system of letters was possible, in the absence of the physiological basis on which alone such an alphabet could be constructed.

Like many other experimenters I had long been engaged on the alphabetic problem; but I worked from different data, and by a totally different process, from those made use of by other explorers. Instead of going to languages to discover the elements of utterance, I went to the apparatus of speech, and, after many partial failures, but with gradual approximations to success, during a long series of years, I had the satisfaction ultimately of discovering, with demonstrable certainty, the complete physiological basis of speech, and of establishing an organic scale of sounds which could not but include all varieties, known and unknown.

A universal alphabet now, for the first time, became possible. To have adopted letters from Roman, Greek, or other alphabets, constructed on no common principle of symbolization, would have been to introduce confusion where all was order, and complexity where all was simple, as well as to create a conflict of old associations where all was new. I therefore discarded old letters, and set myself to the task of inventing a new scheme of symbols, each of which should form a definite part of a complete design; so that if the plan of the alphabet were communicated—as it can be perfectly—by diagrams, each letter would teach its own sound, by expressing to the reader's eye the exact position of the sound in the physiological circuit,—the latitude and longitude, so to speak, by which it may be at once found in the mouth, by speakers in all countries. In this way an alphabet of incomparable simplicity has been produced,—an alphabet really available for all mankind, expressing, as it does, to the minutest shade of difference, every sound that can be formed by human organs.

You will understand, then, that the title, "Visible Speech," implies not merely a universal alphabet, but a scheme of letters which are physiologically *representative* of sounds, and not, like ordinary alphabetic characters, only associated with sounds, arbitrarily, and by convention.

In treating of this subject before a popular audience, I have dwelt chiefly on the more remarkable general and social applications of the invention; before the Ethnological Society and the College of Preceptors I gave prominence to points of special interest to linguists and teachers; and, similarly, in presenting the subject before the Society of Arts, I shall keep in view, as my appropriate theme, the art itself—the *modus operandi* of the system.

In the first place, speech is something heard; and the question naturally arises, "How, then, can it be visible?" This I shall endeavour to explain to you. The only difficulty lies in the total novelty of the idea; the manner of producing the effect is simplicity itself. The principle will be best brought out by analogy.

An artist conveys the idea of laughter by drawing the lines of the face as they are seen under the influence of mirth; and, if written language were made up of pictures instead of letters, we should at once read the word "laughter" in the outline of the laughing face. Every passion has its facial writing, and the idea of every passion might be expressed on paper by a picture of the muscular arrangements of the face, so that all persons seeing the symbols would have a common knowledge of their meaning. Now, it is on a similar principle that "visible speech" is representative of the sounds of languages.

In forming any sound we adjust the parts of the mouth to certain definite attitudes, and the sound is the necessary result of our putting the mouth in such a shape. Thus, you cannot sound O with the mouth in the position for E, or L with the mouth in the position for S; every sound has its own position, every position yields its own sound, and no other. If, then, we can represent the various positions of the mouth, it is obvious that in their symbols we shall have, practically, a representation of the sounds which cannot but result from our putting the mouth in the positions symbolized. Visible speech is the application of this principle of symbolism to every possible arrangement of the mouth, so that, whatever your language, and whether you speak a refined or a rustic dialect, you can show the exact sounds you make use of in the forms of the letters by which you write them. In this way a Chinaman may read English, or an Englishman Chinese, without any difficulty or uncertainty, after he has learned to form his mouth in accordance with the directions given him by the letters.

Nearly all alphabets contain vestiges of a similar principle of relation between letters and sounds, which, there is good reason to believe, must have been applied in the original designing of many of the letters. We need not doubt these evidences because we cannot trace the principle in all the characters of any alphabet, for we do not know what changes the letters may have passed through in the hands of transcribers before the art of printing gave fixity to their forms. Early alphabets were, besides, very limited; and only the most obvious relations could be exhibited. You cannot symbolize what you do not know; and it is not to be supposed that the designers of primitive letters were fully acquainted with the mechanism of sounds, when this knowledge has baffled investigators in all after-times on to the present. If you do not know how you produce a sound, you cannot write it organically; but, on the other hand, if you know how a sound is made you can pronounce it. Visible speech, then, as it shows you how to form every sound, enables you to pronounce every sound. This is the essence of the invention. Each letter explains itself and makes the manner of its pronunciation visible. The effect is, that you can distinguish, and produce at once, varieties of sound which you might have been months in acquiring by unguided imitation. To give you an illustration of this:

Shortly before I left Edinburgh—in the early part of last year—an elderly lady called on me, accompanied by two young ladies who were going out to India as missionaries. The elderly lady had been for upwards of twenty years engaged in mission work, and she spoke the language of the district like a native. Nevertheless, she could not teach the English girls to pronounce some of the peculiar sounds which she had acquired by habit. They had been for some time under her instruction, but they could not catch the knack of certain characteristic elements. Having heard of "Visible speech," the lady called to solicit my assistance. I knew nothing of the language she pronounced before me. Some of the sounds I had never heard in linguistic combinations, though, of course, I was acquainted with them theoretically. I saw the young ladies for only half an hour, but this proved long enough to give them the power of pronouncing the difficult sounds which, while they did not know precisely what to do, they could not articulate. Strangely enough, since I came to reside in London, I heard a clergyman and former missionary, speaking of these very girls, remark on the great success with which they pronounced the Canarese language before they left this country; and the speaker knew nothing of their previous difficulty, or how it had been overcome. I mention this fact because it foreshadows the great advantages which will be universally felt in the learning of languages when the new letters are brought into general use.

In a leading article on "Visible speech," which appeared in one of the newspapers a short time ago, the writer refers to the letter O in the Roman alphabet, as exemplifying a corresponding principle to that of the new letters. He says:—"If you place this letter before an illiterate person, and tell him to put his mouth in that position, and roar, he will immediately produce the sound of the letter." This is, so far, a very apt illustration, but the letter O shows no more than the round form of the lips, which, after all, is not necessary to the sound of O; it does not tell you the position of the tongue, which produces a variety of vowels with the lips in the same shape. Now the letter for O in the visible speech alphabet shows you how both tongue and lips are adjusted, and exhibits the organic distinctions between the Scotchman's O, the Frenchman's O, and the Englishman's O. Nothing apparently could be simpler than the sound of the letter T; yet even this may be written in half-a-dozen different ways, to show the manner in which it is pronounced by different speakers or in different languages. And so of all sounds; shades of difference which the unaccustomed ear cannot recognise, but which are nevertheless real distinctions in one language or another, are all expressed in the forms of the letters in visible speech.

I refrain from saying a word as to the uses of this alphabet, believing that these will suggest themselves to your own minds, my object being to give you a definite idea of the principle on which the alphabet is constructed. Exemplification will supersede description of the nature of elementary sounds. I shall, therefore, first let you hear some varieties of each class of sounds pronounced from their symbols, and then add such explanations as may seem necessary to give you a clear conception of the plan of the alphabet.

I may premise, for the benefit of those who have no previous acquaintance with the details of this subject, that the number of sounds discriminated in different languages amounts to several times the number of letters in the English alphabet, and that the number of sounds in English alone is not less than forty, though we have but twenty-six letters. In the "Standard Alphabet" of Professor Lepsius, adopted by the Church Missionary Society, the number of symbols introduced is 186; but even with this vast number of types, that alphabet is found imperfect for many languages, and additional letters have to be employed. You will not wonder at this when I mention that in the organic actions of the mouth considerably more than 200 varieties of simple vowels and consonants can be discriminated, without including a single diphthong or combination. Now all of these varieties are actually used in languages, dialects, or by individual speakers. I do not propose to tax your ears by exemplifying all the possible shades of elementary sound; many of them, indeed, are too minute to be easily distinguished in separate pronunciation; but I shall let you hear the principal radical varieties of each class of elements.

The first set consists of interruptions and emissions of simple breath; these are whispered consonants:—

(*Illustrations of Whispered Consonants.*)

The next set of elements consists of interruptions and and emissions of murmur or voice; they are vocal consonants:—

(*Illustrations of Vocal Consonants.*)

The next set of sounds consists of simple vowels:—

(*Illustrations of Vowels.*)

Each of these elementary sounds is expressed in printing by a single type, without any dots, lines, or accents, above or below the letters. The total number of types required for printing these and many other modifications of sounds is only thirty. The addition of a few diacritic signs expresses such sounds as the following, which consist of diphthongs and nasal vowels. A small selection only need be given, as you will understand that any possible compound or modification may be written.

(*Illustrations of Diphthongs and Nasal Vowels.*)

Not only the ordinary elements of languages find their physiological symbols in this alphabet, but interjectional and inarticulate sounds; in fact, any attitude of the mouth, audible or silent. Such effects as the following, therefore, are all expressed in simple a, b, c.

(*Illustrations of Interjectional and Inarticulate Sounds.*)

All varieties of animal and mechanical sounds also may be perfectly written, the only difficulty being to find out precisely what the organs do in forming the sounds. The following are a few examples:—

(*Illustrations of Animal and Mechanical Sounds.*)

I have extended these illustrations thus far, in order that you might the better comprehend the minutely directive effect of the organic and functional symbols which compose the alphabet. These symbols, I may add, are as simple to the eye as Roman letters; and they are so definite in their forms that no person of ordinary intelligence would fail to discriminate them after a single explanation. I tested this recently with a little girl ten years of age, who, in the course of half-an-hour, learned to distinguish with certainty the whole of the symbols. A little explanation will enable you to understand how this important result is brought about.

Each symbol has a name, and the name does not include the sound of the letter, but merely describes its form. The learner has thus, at first, nothing to do with sounds; he has only, as it were, to recognise pictures. But the name of the symbol expresses also the arrangement of the mouth which produces the sound, so that when the symbol is named, the organic formation of its sound is named at the same time. The only thing further to be learned, therefore, is the mode of adjusting the mouth in accordance with the symbols.

To estimate the simplicity of this process, you must now be informed of the number of symbols made use of. The total number is thirty. The signification of thirty signs being known, the entire alphabet is mastered. I mentioned before that considerably more than two hundred varieties of simple vowels and consonants could be discriminated. I have only to add that they may all be written by means of these thirty symbols, and that the total number of modifications capable of being represented by the same elementary signs is vastly greater, and very far in excess of all the varieties that languages or dialects present, or that the ear could distinguish.

To give you a clear idea of the nature of the symbols, I shall explain, with a little more of detail, their relations to the organs and processes they represent, and by experimental illustrations afford you an opportunity of seeing how these relations guide the reader in the translation of "visible" into audible language.

In the first place all vowels have a common generic sign, and all consonants another; vocality and whisper have their respective symbols; inspiration, retention, and expulsion of breath have their symbols; organic appulse, vibration, &c., have their symbols; the lips, the soft palate, the pharynx, the glottis, and the different parts of the back, the front, the surface, and the sides of the tongue have their distinctive symbols; the various modes in which the breath or the voice is shut within the mouth or extruded through crevices or passed wholly or partially through the nostrils are all symbolised. Thus every part of every letter has a meaning, and the total number of parts that make up all the letters, diacritic, and radical together, is, as I have already said, only thirty. These thirty signs may be embodied in a larger or smaller number of types, according to taste and convenience, such of the symbols as together represent simple elements of speech being properly combined in single types. The highest possible advantages of the system would be secured by extending the number of types to about sixty. At present, I and my sons—as yet the only experts in the use of visible speech—write the alphabet in a form that would be cast on between forty and fifty types, which is but little more than the number in an ordinary English fount, including diphthongs and accented letters. This number does not require to be exceeded, in order to print, with typographic simplicity, the myriad dialects of all nations.

The elementary sounds of speech are exceedingly numerous; the combinations are infinitely so. We see the advantages of analytic writing, even in our imperfect and purely conventional representation of words by ordinary letters. How much greater, then, must be the benefits of a perfect analysis—of a resolution of elementary sounds themselves into their ultimate organic elements! The latter are so small in number, and thus may be learned in so short a space of time, that the myriads of illiterate persons in all countries may, in a few days, become qualified to read their own language. But one of the most striking results of this physiological alphabet will be seen in its application to telegraphy. The symbols of speech, in all their varieties, may be transmitted by telegraph through any country, by ordinary instruments, and without the necessity for a knowledge of any given language on the part of signallers. In fact, no other qualification is needed than the mere power of discriminating forms—which the Turk possesses as well as the Englishman. The operator has nothing to do with sounds, and he may be totally ignorant of the value of a single letter, while he communicates with equal facility the exact utterances of a message in any tongue. It is impossible to over-estimate the value of this application of "visible speech," which will render the telegraph as cosmopolitan as the electricity which it commands and intellectualizes. At present, as you are aware, a committee of the House of Commons is engaged in investigating the causes of the telegraphic blundering which has proved so perplexing, often so ludicrous, sometimes so disastrous, in the transmission of messages to and from India. The true remedy for such errors is furnished by this invention. The old and imperfect alphabets cannot serve the purposes of international telegraphy; this complete and universal alphabet supplies the very instrument required. One sentence in an article which appeared some time ago in the *Athenæum* happily sums up the characteristics of visible speech:—"A great many efforts have been made to spell words, but the system before us spells spelling."

I trust that I have succeeded in the object I had in view, and given you, in these details, an accurate conception of the principles on which the system of "Visible Speech" is based. You will, doubtless, need no argument to convince you that the publication of the theory of the system and the scheme of symbols must necessarily be supplemented by oral teaching of the scales of sounds, in order that the invention may be applied with uniformity. I am willing to surrender my private rights in the invention *pro bono publico*, on the simple condition that the cost of so introducing the system may be undertaken at the public charge. A universal alphabet is not a proper subject for private copyright; and the dissemination of a cosmopolitan system of letters is a task beyond the unsupported efforts of a private individual. If you agree with me in this conclusion, the statement of the conviction by the Society of Arts would probably secure the attention of Government to a proposal which, from motives of distrust, or I know not what—apathy it cannot surely be—has not hitherto obtained a hearing.

The only result of my applications to the different branches of the executive has been to elicit the fact that it is nobody's special business to receive such a proposition, and that everybody has some other business to attend to. Meantime the energies of a vast utility are lying dormant; the years are fleeting; and the time will soon come when the willing workers of to-day will have ceased from all ability to labour.

You have now before you the materials for forming a judgment on the theory of "Visible Speech," and for discussing the expediency of your remitting the subject to the Council of the Society, to ask for the acceptance by Government of the offered invention, that it may be made available for the free use of all people.

With reference to the symbols, I may state, in conclusion, that they have been shown to Sir David Brewster, to Mr. Alexander John Ellis, the eminent phonetician, who has been most appropriately invited to preside on this occasion, and to Professor de Morgan, of the London University—three impartial witnesses, whose competency to form an opinion will not be disputed. You will, I am sure, accept their judgment as your own, in reference to the fact that the symbols really carry out the theory which I have explained to you. Their verdict to this effect is unanimous. In the words of Professor de Morgan, visible speech "must be called the final victory over a difficulty as old as written language, and an obstacle which seemed to inhere in the nature of writing itself."

It is only necessary to add, that the new alphabet is adapted for current writing as well as for printing; the forms of the characters merely requiring such slight modifications as common letters receive in the ordinary script alphabet.

I shall now be happy to write any sounds which you may suggest, by way of practical tests. My son will leave the hall while this is being done, and on his return he will describe to you what the symbols tell him to do, and reproduce the sounds from the writing.

At the conclusion of the paper, Mr. Bell's son having left the room, sentences in different languages, French, Arabic, Bengali *patois*, negro dialect, Persian, Gaelic, Scotch, and Norfolk dialect, were dictated to Mr. Bell by various gentlemen present, and by him written down in his symbolical alphabet. Mr. Bell's son then returned to the room and read them aloud with great accuracy.

DISCUSSION.

Mr. Hawes suggested that Mr. Bell would be good enough to write a short sentence in his new alphabet on the board, and let that be read off; it would add greatly to the interest of the subject.

Mr. Bell replied that he had explained the theory of his system, and had offered it *pro bono publico*. He was ready to explain the details of the system to any committee whom the Council of this Society or any other scientific body might appoint, and, if they thought it really valuable, perhaps they would recommend the Government to take it up for the benefit of the public. If he were to write a sentence on the board as requested, it would really add nothing to the knowledge which he had already given them on the subject.

Mr. Hawes said that, as Chairman of the Council, he protested against this apparent reserve on the part of the author of the paper. It was one of the great objects of the Society that everything brought forward in that room should be explained for the benefit of the public. Mr. Bell had very fairly offered the invention to the Government, upon the condition that they would be at the expense of providing the printing types and introducing the system to the public; and he could scarcely imagine that the placing of a short sentence upon the board, in illustration of it, could militate against the success of the invention. In the absence of such an illustration, he did not think the meeting could satisfactorily discuss the subject.

The Chairman said it was a difficult matter for an inventor to decide how much of his plan he would give forth to the public. Mr. Bell had occupied himself for a number of years in perfecting his system, and he had shown the meeting in a satisfactory way how his symbols recalled to the reader the positions of the organs of speech when producing certain sounds. To illustrate the principle it required more than the writing of a few symbols on the board, and he did not think, from what he personally knew of the subject, it would enable any one to judge of the capabilities of the system. It had been stated by Mr Bell that his alphabet had been acquired by a little girl in half an hour; but he (the Chairman) found that it occupied him some six or seven hours in fully understanding and appreciating the merits of the system. He thought the offer of Mr. Bell to lay the whole matter before a committee appointed by the Council of the Society, was as much as could be expected of him. The illustrations which which had been given this evening were quite sufficient to acquit Mr. Bell of all suspicion of charlatanism in having possession of a secret which he exhibited as a marvel to the public; and the examples which had been given were a proof of the strictly scientific principles on which the system was based. He thought if it could be made generally available it would be of the greatest value in assisting philological research. It was a remarkable feature of the system that unknown sounds could be written in symbols in such a way as that a person who had not heard them uttered was able to reproduce them with the accuracy they had heard this evening. Having spoken of the various uses to which he considered this system was applicable, the chairman remarked that he approached the consideration of it as a sceptic, but an investigation into it had convinced him of the soundness of the scientific principles on which it was based; and his scepticism entirely vanished when the details of the system were laid before him by Mr. Bell. He should be glad to see some scientific body take the matter up, as he was convinced there was a great deal of practical utility in it. Looking to his own personal experience in connection with the introduction of the phonetic system, he fully sympathised with the resolution Mr. Bell had come to not to take the personal charge of introducing his system to the world.

Mr. Campin thought, after the illustrations of the system which had been given, the offer of Mr. Bell to explain to a Committee of the Society the full details of it was as much as could be expected of him.

Mr. Mackie said this was the second occasion on which he had heard Mr. Bell's exposition of his system, but he had never been gratified by any visible illustration of the symbols employed. He apprehended that phonetic writing could be adapted to any language, and he thought any one who had read Scott's novels could speak broad Scotch as well as a Scotsman. With arbitrary sounds given to different combinations of letters, imitations of sounds might be produced in any language. It was the object of an audience like the present one to know if there was anything fundamentally good in the system brought before them. He must say he was at a loss for any reason which should induce Mr. Bell to withhold the secret from the world, seeing that that gentleman did not ask for pecuniary remuneration from the Government for his invention, and that he did not intend to patent it. He submitted that definite principles must be laid before the audience before they could judge of the value of an invention, and those principles must be exhibited in a form which they could take cognizance of. If the invention was one of practical utility he was quite sure there would not be wanting the means of producing the types of the new alphabet; many typefounders would be willing to cast them, if once convinced of the practical value of the system.

Dr. Caplin stated that although he had been resident in England for thirty-three years he was almost as far as ever from the correct pronunciation of the English language, although he was able to read and write it with facility, and he should be very glad to see a system introduced which would enable foreigners resident in this country to acquire a correct pronunciation of the language.

The Rev. George Small apprehended that the object of this paper was not to reveal the secret of the invention, but rather to incite people to inquire further into it. He had not attended himself in the expectation that he should be taught in one evening a system which had cost the author of it so many years of labour and thought to bring it to perfection. He thought the offer which Mr. Bell had made to lay the details before a committee was a very generous one, and was all that could be expected of him.

Mr. Hancock said the principle laid down by the Chairman of the Council in the interests of the Society was one that he fully approved of. The custom of the Society was that no question should be brought before it in a secret form. Although his own views with regard to patents were not so far advanced as those of Mr. Hawes, still he felt it his bounden duty to support him on this occasion. He thought the title and scope of the paper had not been fully realized, and he hoped, if the feeling of the meeting was with the author on this point on the present occasion, it would not be converted into a precedent that secret inventions were to be brought before the Society.

Mr. Blackie considered that Mr. Bell had gone as far in the exposition of his system as could be expected of him, and he hoped the meeting would not press him further on the subject. He was not surprised at the Chairman of the Council taking the view he had stated, as he was a known opponent of all patent rights.

Mr. Hawes said this was not an occasion for entering into the discussion of the patent laws, his views on which he was always prepared to maintain. He thought that the present meeting had been brought together by a paper which purported to make them understand "visible speech;" but he confessed there had been nothing in the shape of explanation or illustration which would enable them to carry away the slightest idea of the mode in which the author effected his object. He could not but feel that those who came before the Society to advocate any particular process or system should conceal nothing. Mr. Bell had stated that he had given up his private rights in this invention, and yet he withheld from the meeting even the slightest visible illustration of his system, because he hoped the Government or some other body would undertake the expense of casting the types, by which it would be made available to the public. How could this Society, or even the Government, take up this matter in the present state of information upon it? As to Mr. Bell's proposition to place the details before a Committee appointed by the Council, he thought it was not the function of the Council to be the receptacle of the secrets of inventors. It would lead to all sorts of difficulties, and was a thing which he was sure the Council would not undertake.

Mr. Bennett did not see that the exhibition of a few hieroglyphics on the board could enlighten the meeting on this subject. It appeared to him, as a commercial man, that a far more important point was involved. The statement of Mr. Crawford, one of the members for the City, before the House of Commons, as to the gross inaccuracies that occurred in the transmission of telegrams from India to this country had led to the appointment of a committee of the House to investigate the subject—showing the great importance which was attached to accuracy in telegraphic transmission. Mr. Bell had told them that by the adoption of his symbols perfect accuracy of transmission in any language, though it might not be known to the operator, could be secured, and he (Mr. Bennett) thought this was a great triumph. If Mr. Bell succeeded in this he would confer a benefit on the commercial world, second only to the telegraph itself.

The Chairman said that whatever difference of opinion there might be as to whether Mr. Bell was wrong or right in not completely demonstrating his system, he was sure all present would join in a cordial vote of thanks to him for his paper.

The vote of thanks having been passed,

Mr. Bell, in acknowledging the compliment, said he was sorry that some of the gentlemen present appeared to think he had been wrong in not making his system thoroughly known. He had brought before them his principle with the results they had witnessed, and yet he was asked to show them his symbols. He was in this position—he had discovered something new which he considered to be capable of world-wide application, but he felt that it was no business of his individually to give it that application; it was sufficient for him, having recognized that it had so much value, to express his willingness to give it for the benefit of the public; but if the public would not accept it, he was under no obligation to force it upon them or to publish it in the way he had been asked to do.

Proceedings of Institutions.

Bank of England Library and Literary Association.—The sixteenth annual report congratulates the members on the completion of another year of steady progress and prosperity, the events of which, however, call for but little special remark. A new supplement to the catalogue has been issued, containing an account of all books, &c., added to the library between July, 1862, and the 1st of June, 1865. Mr. W. O. Wheeler, one of the Assistant-Librarians, has resigned his office, and the health of the Librarian and Assistant-Secretary has much improved. The number of the subscribers to the Association is now 485, making, with 10 life members, the total number of 495, showing a slight increase on the preceding years; the number of volumes now in the library is 10,850, being an increase of 543 vols.; and of this increase the donation of Mr. C. P. Grenfell, formerly a director, represents 184 volumes. Mr. R. W. Crawford, M.P., has presented a copy of "Hansard's Parliamentary Debates." The financial statement shows that the receipts have been £298 8s. 2d., and that there is a balance in hand of £8 15s. 1d.

DIRECTORSHIP OF THE ROYAL ACADEMY OF MUSIC.

The *Orchestra* has the following remarks on Mr. Mapes's letter, printed last week:—

"Mr. Mapes, an accomplished amateur and composer of sacred and secular works of merit, has published a letter in an evening paper on the subject of musical education. The main object of the writer is to insist on the necessity of a higher class of educational acquirements than musicians usually possess. Beyond the mere technical knowledge of their art, musicians, he insinuates, are proverbially an illiterate race of persons. He attributes this to the fact of parents of needy circumstances bringing up their children to music at little cost, and encouraging their endeavours to gain a livelihood before they are sufficiently qualified to give sound instruction in their art. These reflections are strongly in favour of a good National Academy, where students may receive gratuitous instruction, complete, beyond the control of indigent or indiscreet persons. We cannot agree with the writer that the director of an academy of music should not be a professional man. Costa's evidence on the discipline of the Neapolitan School under Zingarelli, and the Paris School under Cherubini, is against Mr. Mapes's theory of the lay element. These remarks we hope may reach the ears of those interested in the movement now making to establish a National Music School, on a scale worthy of the nation, and in selecting the right man for the right place."

INTERNATIONAL EXHIBITION OF FISH AND WATER PRODUCTS IN FRANCE.

Mr. James Caird, in a letter to the *Times*, says:—

"Having been requested by Government to act as British Commissioner at the Exhibition to take place at Arcachon in July next, I shall feel greatly obliged if you will allow me to make public the object of that Exhibition. The vast importance of the products of the sea, rivers, and lakes, both as food and for use in the arts, is forcing itself into notice. The French Government have organized an Exhibition illustrative of this, under the presidency of the Minister of Marine and the Colonies, to be held at Arcachon, a seaport near Bordeaux, in July next. They invite from the seaports of their own country, and the fishing ports of their maritime neighbours, contributions to the Exhibition. These are variously classed, and comprehend specimens of cured and preserved fish for food; oil for use as medicine; chymical products extracted from seaweed: shell, amber, pearl, colouring matter, &c., in connection with art; industrial products, such as oils, skin, whalebone, sponges, &c., marine manures, shell sand, and seaweed. Another class includes tools and machines for making boats, models of fishing boats, of oyster-beds, and of salmon ladders; lines, nets, and fishing apparatus, and oyster dredges. Then there are instruments for preserving and smoking fish, with plans and models of curing establishments, and descriptions of modes of packing and transporting fish. There will be collections also of memoirs on the subject of fish and fish culture and management, with plans, charts, drawings, and photographs. For these prizes will be awarded, according to their respective merits, and the cost of transporting the articles for exhibition will be borne, either altogether or in part, by the administration of the Exhibition. It is very desirable that the important fishery interests of this country should be creditably represented, and I shall be happy to receive and reply to any communication on the subject from persons desiring to contribute to the Exhibition. The entry of articles is requested by the beginning of April, and they must be despatched so as to reach Arcachon by the 1st of July."

PARIS UNIVERSAL EXHIBITION, 1867.

The following memorandum on the arrangements for the machinery gallery of the Paris Exhibition is by Captain Festing, R.E.:—

1. By the general regulations for the Universal Exhibition, approved by Imperial Decree of the 12th July, 1865, instruments and processes of the common arts are placed in Group VI., which is divided into 20 classes. A gallery, 115 feet wide and 82 feet high, is to be provided in the building for this group. In breadth this gallery is to be subdivided into a central block, 75½ feet wide, and two side passages, each 16½ feet wide, leaving a space of a little over three feet at each side for counters and glass cases, placed against the partition walls. In the middle of this central block, and running throughout the machine gallery, there is to be a platform, 13 feet wide, supported on columns about 14½ feet high. From this platform visitors will be able to see at a glance the machines exhibited. The columns of the platform will also carry two parallel main shafts for transmitting motion to the various machines, and under the platform will be workshops for skilled mechanics, whose work is to be exhibited as examples of the processes of the common arts. In the words of the supplementary instructions issued by the Imperial Commission relative to the arrangement of this group:—

"It is not enough, in fact, to show to the visitors of an exhibition the mechanical powers characterized by power and speed. In juxtaposition with them must be placed the work of man, showing perfection of taste, manual dexterity, and intelligent precision. In adopting this scheme the Imperial Commission believe that they will remedy an undesirable omission, and at the same time add a perfectly new attraction to the Exhibition of 1867. By this means the Commission hope to suggest comparisons both useful and productive, to bring to light the share of the workmen in the productions of industry, and at the moment when machinery seems on the eve of absorbing every manufacture, to show that for certain works the hand of man can defy all mechanical competition. A special Class of Group X. (Class 95) comprises the most attractive and ingenious processes carried on by hand-labour, and particularly those suitable to skilled workmen. But some of the Classes of Group VI. are also open not only to the apparatus enumerated in the system of classification appended to the General Regulations (Appendix A.), but also to the workmen achieving, either with or without simple tools, results which these apparatus produce mechanically. The following may be quoted as examples:—In Classes 55 and 56, weaving, rope-making, spinning, embroidering, knitting; and in Class 69 paper-making, bookbinding, &c.

"This Exhibition of manual labour will not excite so much interest unless it be placed in juxtaposition with the machinery with which it contends with more or less success, according to the particular industry. The workmen who are to use manual labour will find, under the central platform mentioned above, a workshop separate from the collection of machines, but sufficiently near to them to render comparisons easy. The portions of this covered ground space thus converted into workshops will be flanked on each side by a passage five feet wide, which will allow visitors to approach and observe in detail the performance of the workmen.

"In order to give greater prominence to the collection of objects comprised in a class, it is desirable that the public circulating in the lateral passages of 5 metres, which extend along the whole length of the gallery, should be able to see the central block displayed as a whole, without being obliged to make their way into it. To effect this object, the Committees should, as much as possible, place the machines upon stages rising from the border of these passages up to the central platform. If necessary, steps with proper foundations rising one above the other would produce this amphitheatrical effect.

"On the other side of the 16½ ft. passage laid out on each side of the central block, tables and glass cases will be placed against the wall for the reception of a multitude of objects, machines or apparatus of small size, which would be lost amidst the large engines placed in the central block. Lastly, the partition walls of the great gallery which has just been described will be available for the exhibition of drawings, trophies, and objects which are of no great thickness. This additional space, which it will be expedient to turn to account, will give a desirable depth to the space where the objects are exhibited. Each Committee should make every effort to obtain for exhibition those little known and attractive processes, each successive stage of which can be followed, showing how the raw material is transformed into the finished product. Under this head may be mentioned the manufacture of paper, completed by the process of printing; spinning, weaving, &c. It will also be desirable, where in any Class the manual labour can be brought into proximity with the mechanical, to find a place for the workmen under the central platform, provided the general arrangements do not suggest a more suitable spot."

2. The cost of all foundations, &c., and all erections and fittings necessary for the proper display of the objects in this group to be borne by the exhibitors.

The motive power for the machines exhibited will of course be procured principally by steam, but other means will not be excluded. Instead of the supply of motive power being carried out, as hitherto, by the administration, it has been decided to employ the system of private enterprise, and to distribute the generators of force at various points round the exhibition building instead of concentrating them in one spot.

3. The whole machinery gallery is to be divided into a number of sections, each of which will have its own system for the supply of motive force.

4. The Imperial Commission will enter into agreements with contractors for the supply of motive power for the various sections.

4. The British Executive has arranged to contract for the supply of motive power to the British portion, which consists of two and a half of these sections.

6. All prime movers are to be inside the building; accumulators for the supply of water under pressure to hydraulic engines should also be inside, as well as reservoirs for gas, compressed air, &c., for working any part of the machinery, if they are free from danger and inconvenience. The boilers or other generators of force which require fire are to be outside the building, at the distance of 98½ feet from the exterior, or about 197 feet from the centre of the machine gallery.

7. Each section of the building will have its set of boilers. From thence the steam is to be conveyed by pipes to the prime movers in the galleries. The prime movers will not be collected in one group, but will be distributed wherever there may be need of motive power, from one horse, or half one horse power, as supplied by gas engines, to that required for the largest machines.

8. The only conditions made by the Imperial Commission with regard to the generators of motive force, is that those for each section should be in a certain position, on one or both sides of, but close to, a road in the park which leads to the entrance door of the section. For each section there may be any number of the same or different kinds.

9. The boilers, shafting, and prime movers will all be considered as objects exhibited, and must be accessible to the public. It will, therefore, be desirable to have as great variety as possible, in order to show the various ways of turning to account the force derived from the combustion of the fuel employed.

10. All machines which work with their own boilers, and which the exhibitors may wish to show in motion, must be placed in the Park. The Imperial Commission will make special arrangements about such machines.

11. Processes which require the use of fire, such as the working of metals, glass-making, &c., must be shown in the Park, and the works will be arranged round the boiler-houses of each section. The exhibitors will have to construct all the necessary buildings for these works, and to plant, turf, and keep in good order the approaches to their establishment.

12. It is suggested by the Imperial Commission that those who wish to exhibit agricultural machines at work which cannot with safety or convenience be placed within the building, should club together to erect in the Park, at their common cost, some inexpensive structure for their machines.

13. Those who may wish to exhibit machines for raising water, &c., may in the same way unite to make a pond in the Park. This pond can be supplied from a well in the French portion of the Park.

E. Robert Festing,
Captain, R.E.

THE IRISH FISHERIES.

At a recent meeting of the Royal Dublin Society, an interesting paper was read by Mr. Hoare, on the "Resources of the Sea Fisheries of Ireland."

The sea fisheries of Ireland from time immemorial are well known to have been subjects of much attention to the naturalist, the cosmopolitan, and commercial man. They have always been treated as a national element, whence great wealth may be derived; and the immense amount of employment obtained in their development renders this question of paramount importance. With respect to the natural productiveness of the Irish fisheries different opinions are entertained. By some it is alleged that the abundance of fish said to exist off our coasts is greatly exaggerated, and, in support of this opinion, ask, if the supplies are so colossal as represented, why is it that so few are captured? The Commissioners appointed in 1863 to inquire into the sea fisheries of the United Kingdom, in their report recently published, take this view of the question; but to those acquainted with the manner in which they conducted their inquiries in this country such assertion will not cause surprise. The extent of their knowledge concerning the Irish fisheries may be inferred from the following statement (page 63), that "Foreign fishermen have never been known to fish off the coast of Ireland." If we refer to any period extending over thirteen centuries, of which we have historical and traditional records, we find at every place where the fisheries were properly and systematically worked there is undeniable evidence of a superabundant supply, and the immense quantities taken sustain the contrary argument. Mr. Hoare described the condition of Irish fisheries from the earliest times, and gave much useful information as to their value and importance. He observed, with respect to the state of the fisheries at the present time, the official statistics are meagre, limited, and unsatisfactory. The Scotch introduced the cotton net, from which time the fisheries have been improving. This improvement the most casual observer must justly attribute simply to development; on the east coast the returns show an increase since 1860 of nearly 500 per cent. Thisfavourable result has not arisen from any influx of the natural supply, but from the increased number of vessels, and the superior appliances employed in the fishery. At Howth official statistics show that the quantities of herrings sold last year from 28th May to 31st of December, realized an aggregate of £94,274. This immense sum was produced during 110 days, by English, Scotch, Manx, and native boats. Here our official information ends. Throughout the entire of Ireland we only know the product of one station, and from such limited knowledge we are at liberty to deduct whatever inference we please concerning the residue, but this at a few places has been supplied by individuals who have taken an interest in the matter. At Arklow we are informed by a gentleman, resident and connected with the fishery all his life, that £23,000 has been paid them for fish taken and sold there during last year, but of which no mention is made in the report of the Board of Works. Again, at Ardglass, it appears, from a recent communication in the *Times*, that last year £21,450 was paid there for herrings caught off that part of the County Down, but as this place is not even mentioned in the report, how are we to know whether this statement is authentic? To my certain knowledge one firm has paid in two months over £15,000 for herrings caught there this year, 1865. At Kinsale, on the south coast, the mackerel fishery has become most productive. Its development has been prosecuted by Scotch, Manx, and Howth boats, which are superior to those used by the local fishermen. In order to illustrate the advantages the large boats enjoy in this fishery, I will quote the following paragraph from the *Cork Examiner*, April 13, 1865:—"One small boat belonging to Kinsale received for one night's haul £44. The number of fish in this take was not quite half the maximum of what had been taken in the Manx boats." This fishery, during March, April, and May, has been most productive, which must be attributed exclusively to development. I believe £20,000 has been paid at Kinsale for mackerel, most of which, as at Howth, goes into the pockets of Manx, Scotch, and Englishmen. Efforts have been made, and are being still made, at Howth and Balbriggan, to manufacture herrings for the home market. Those efforts, although subject to the greatest opposition, have nevertheless been successful, as some correspondence in the *Irish Times*, copied from the reports of the Scotch Fishery Commissioners, shows that the importation of Scotch herrings since 1854 has decreased nearly 50 per cent. In this instance we have undeniable proof that the development of one fishery on one part of the coast has been the cause of replacing Irish herrings where Scotch previously reigned absolute.

Last year (1864) there were cured at Howth over 5,000 barrels of herrings, as everyone acquainted with the trade is aware, but we find no notice of the circumstance in the report of our Commissioners, although it is recorded in the Scotch report. Every measure that can be conceived is promulgated to discourage this branch of the business which is so beneficial in Scotland. Frequent applications have been made for permission to erect either temporary sheds or permanent buildings to protect the industrious women and children employed in gutting, packing, and cleansing the fish, according to the most approved system; but the Board would not entertain these proposals. On the contrary, they used every means in their power to discourage the immense employment derivable from this branch of the business, and by that means they violated that law which they have been appointed commissioners to execute. Mr. Pim, whose philanthropy during the famine was so striking, and whose work then published on the condition of Ireland is to be found everywhere, remarks that the harbour accommodation and fishery piers were by no means sufficient for the protection of the fishermen on a coast so much exposed to storms and open to all the full force of the ocean. During 1846 and 1847 £90,000 was voted to be applied for the erection of piers and harbours; but this fund, like all others in connection with the fisheries since their management was given to the Board of Works, was distributed to suit their convenience, and the consequence was that they only expended £74,700, but what became of the residue we are not informed. The engineering judgment displayed in erecting these piers was really shameful. Now, let us look at Scotland. The report of the commissioners appointed to inquire into the sea fisheries of the United Kingdom, recently published, states that the moneys spent in the making and maintaining fishery piers and harbours in Scotland since 1829 amounted to £147,242 14s. 4d. Now, in face of all the encouragement the Scotch fisheries received, let us see if they were more productive than the Irish. Let us take the head centre of the Scotch fishery, Wick, where, during 1864, the average number of fishing boats was 976, and the average catch per boat was 92 crans, or 120 mease. The only statistics we possess concerning the Irish fisheries, as I have before remarked, are at Howth. The returns at Howth show that during 1864, the average number of boats was 169, and the average catch per boat was 1,069 mease. These figures are incontrovertible. They give us the reason why the Scotch preferred Dublin Bay to their own fisheries, notwithstanding all the support they have received from the Imperial Treasury. The Irish fisheries only require development, management, and a little capital.

In the discussion that followed

Mr. Barry, Commissioner of Fisheries, said there were one or two facts to which he was able to bear testimony. For the last few years they were blessed by a most unusual influx of herrings upon the eastern coast. From the 3rd June to the 23rd December 72,932 mease of herrings had been caught on the coast, and had been sold at from 32s. to 12s. 1d. per mease, or an average of 19s. 8½d. per mease, amounting in value to £72,134 4s.; that was at Howth alone. The total catch at Arklow for the last season amounted to 30,000 mease, the average price of which might be set down at 14s. per mease, realizing at least £21,000. This was highly important, and went to show what the resources of the country were. In reference to the branding system, alluded to by Mr. Hoare, he agreed with that gentleman. He believed that the spirit in reference to branding in Scotland was one of monopoly, got up by the large curers, and to oblige small curers to flock into them with their little quantities in order that they might be enabled to sell the herrings at good prices.

Lord Longford said that the case of the Irish fisheries appeared to be the same as that of the Irish land—great capacity in both, but very scantily developed. In comparing the case of the Scotch and Irish fisheries, it seemed to be inferred that the success of the Scotch fisheries was to be attributed to the encouragement they had received from Government and elsewhere. If the same support was given to the Irish fisheries, he believed they would be as successful as those of Scotland.

Manufactures.

COTTON MANUFACTURE IN CALIFORNIA.—According to the *New York Herald* manufacturing is extending in California at a gratifying rate—so rapidly, in fact, that the growth of cotton in that state promises to receive a fresh stimulus. Cotton goods, manufactured in California, have recently, for the first time, been offered for sale in the San Francisco market. They were manufactured in Oakland, a new mill having been lately finished there. Considering the fact that the machinery is stiff, the operatives not yet fairly settled down to their work, and the inferior quality of the raw material, the goods are creditable as a first effort. At present only eleven looms are in operation; but soon there will be thirty-two in use, when it is expected the daily production will reach from twelve to fifteen hundred yards. By an act of the Californian State Legislature, a premium of 10,000 dollars has been offered for the first production of certain amounts and descriptions of cotton goods, and the Oakland Mill is in a fair way to obtain it. At present the factory is running on Mexican cotton, which is short stapled, and not altogether adapted for some kinds of goods; but next year it is hoped to obtain a supply of raw material of native Californian growth, sufficient to obviate the necessity of importing supplies from Mexico or elsewhere. Several hundred acres of cotton are now under cultivation in the southern portion of the state, and its successful production within the limits of California is already satisfactorily demonstrated.

USE OF HYDRO-FLUORIC ACID IN THE MANUFACTURE OF SUGAR.—The *Journal des Fabricante de Sucre* says:—"Notwithstanding the numerous improvements in the manufacture of beetroot sugar during the last ten years, the molasses, which contains 52 to 56 per cent. of crystallizable sugar, has not as yet been freed from the salts which hinder the crystallization, and it must either be consumed as it is, or used in the manufacture of alcohol or of potash. Manufacturers are still in search of an acid which, without injuring the organic matters, should remove the alkalis contained in the beetroot juice, or in the lime employed in defecation. It has long been known that hydro-fluoric acid has this property, and the fact induced M. Frickenhauss to undertake a series of experiments which have demonstrated, on a small scale, the action of this acid. Using 4 per cent. of lime and the corresponding quantity of hydro-fluoric acid, he obtains a juice which could not have been made by any other defecatory process. His experiments also show that the sugar undergoes no change from the hydro-fluoric acid, that it is possible to apply it to the raw juice, and that the action of the clay mixed with the juice becomes even more energetic than under the old system. Last December, in the Friedens-Au factory, the process was tried on a defecating boiler holding 1,200 cwts., to which first 4 and afterwards 8 cwts. of hydro-fluoric acid, much expanded at a temperature of 40° centigrade, were added; this was afterwards removed at a heat of 70° centigrade by 14 lbs. of lime. The juice was perfect, and marked 87 to 88 per cent. on the polarimeter, while by the ordinary process it only marked 79 to 80. The expenses were also much smaller."

IRISH MANUFACTURES.—Silk manufactures, since their introduction by French emigrants, in the beginning of the last century, have been confined to Dublin; its chief branch is tabinets, or Irish poplins, which still flourishes. The woollen manufacture, which was nearly extinguished at the Revolution, recovered for some time after, but is now confined to Dublin, Cork, King's County, Waterford, Kilkenny, and Queen's County. There appears to have been a positive decrease of factories in use between 1839 and 1850, no doubt owing to a decline in the trade, which has revived since, and these discontinued factories have been re-occupied. The total number of counties manufacturing is ten, and in these there are only four in which there are a hundred persons employed in the aggregate, viz., Kilkenny, Dublin, Cork, and Westmeath. The trade has entirely left Kildare and Wicklow, and has been established in Fermanagh, Limerick, Meath, and Westmeath, since 1839, and a great improvement has been made in the machinery. The cotton trade is found in six counties only; it has entirely disappeared from six. In 1862 there were 1,412 persons employed in this trade in the county of Waterford, 639 in the county of Antrim, and 492 in the county of Dublin. There is not in any county a single instance of the number of cotton-mills increasing since 1839—in Londonderry and Tyrone, however, it is new. In 1862 the total number of mills was nine, and the number employed 2,734. A new factory has lately been erected at Drogheda. A great source of employment for females has of late years sprung up in the North of Ireland in the working of patterns on muslin with the needle. Belfast is the centre of this manufacture, which employs about 300,000 persons, chiefly females, scattered through all the counties of Ulster and some localities of the other provinces. About forty firms are engaged in the trade, some being Irish houses and others agents for Scotch firms, and the gross value of the manufactured goods amounts to about £1,400,000.—In 1860, the year before the repeal of the duty on paper, 9,314,985lbs. of paper were manufactured in Ireland, being an increase of 1,022,524lbs. on the previous year; the quantity made in 1817 was only 5,711,546lbs.

Commerce.

SUGAR FROM THE SORGHUM.—"With regard," say Messrs. Travers, "to the sugar supply of America from home sources if the beet fail, there appears to be good reason for hope that the difficulties which have attended the utilisation of the sorghum will sooner or later disappear. The National Sorghum Convention is now sitting in Washington. 'The Convention,' says the *New Orleans Picayune*, 'has decided upon a definite classification of the different varieties of canes, which will be published, with accurate botanical and popular descriptions, and carefully-executed engravings.' It is rumoured from New York that a method has been discovered of extracting crystallisable sugar from the juice of the sorghum. If this process be commercially successful it will be of the highest importance, as the climate of the Western States appears to be well suited to the plant. At present the greater number of farmers in the West have small plots of the sorghum, from which molasses is made."

TRADE IN FRANCE.—The French Director-General of Customs has recently published a comparative statement of the trade of France in the year 1865 and in former years. The value of merchandise imported into that country in the year 1865 amounted to 2,782,000,000f., exceeding by more than 254,000,000f. the imports of the year 1864. The exports during the same period exceeded those of the previous year by 275,000,000f. The merchandise exported in 1861 amounted to only 1,926,260,000f., and reached nearly 3,200,000,000f. in 1865, showing an increase of 1,273,000,000f. within five years. The importation of precious metals into France in the year

1865 exceeded the exports by more than 223,000,000f. The sums received by the Minister of Finance from the two sources of revenue—the customs and assessed taxes—in the year 1865, amounted to 741,000,000f., against 672,000,000f. in the preceding year. This surplus is derived from the assessed taxes, the customs having produced 2,346,000f. less in the year 1865 than in 1864.

Colonies.

Agriculture in Queensland.—The wheat crop promises to exceed that of any previous year; there is a much larger area under this cereal than is generally conceived, many districts being self-supporting as far as wheat is concerned. These seasons prove that wheat-growing is eminently fitted for Australia, it being able to withstand droughts that wither up other crops, such even as maize. On drained land the crop is really fine, and even heavy, 40 bushels to the acre not being unusual, while the quality is first-class. The success of sugar growing has at length been placed beyond a doubt, and the consequence is that sea-coast lands are not to be had unless at heavy prices, capitalists gathering them all up, while railways are being surveyed by private enterprise from Ipswich and Brisbane to the older settlements on the coast.

North Australia.—Mr. Howard, master of H.M. surveying vessel *Beatrice*, has presented to the Governor of South Australia an interesting report of his survey of the Northern coast of Australia, and especially of the Victoria and Adelaide rivers, on which a good deal of interest now centres, in connection with the future settlement of this portion of the continent. It appears that the coast-line has undergone a good deal of alteration since the survey of Captain Stokes, owing to the shoaling up of the river mouths, and the alteration of the currents and tides. Whether the Adelaide river or the Victoria river is to be the seat of empire in North Australia is a question on which Commodore Howard attempts to throw some light in his present report. From this report it appears that the coast-line of the Northern territory has now been examined from Adam's Bay to the Victoria river, that several detached places to the eastward have been looked at, and that the Adelaide river has been again explored. The result is, according to Mr. Howard, that he has seen no place better fitted for a first settlement than that chosen by Mr. Furness, and that the only harbour which could have been selected with advantage is Port Darwin. So satisfied is Mr. Howard that Adam's Bay will become the port of call for shipping sailing northward, that he proposes, as his next work, to undertake a detailed survey of Clarence Straits and the passages through the Vernon Islands. The impression which this report leaves on the mind is that North Australia is a fine country, that the climate is good, and that the natives might be easily dealt with, but that the handful of settlers of Escape Cliffs are leading a hopeless, despondent life.

A New Zealand paper says:—"Considerable progress is being made in the work of introducing the improved machinery and processes of England amongst us. A large brass and iron foundry, having all the modern mechanical appliances of the best kind, used in the most extensive machine-rooms at home, has been constructed, and is now in working order."

The International Exhibition of the products, arts, and manufactures of New South Wales, Queensland, South Australia, Western Australia, Tasmania, New Zealand, and Victoria, to be held during the present year in Melbourne, promises to assume proportions somewhat beyond the calculations of its authors. It is estimated that from the growth of manufactures and the general progress of the colonists since 1861, the space required by Victorian exhibitors alone would need an edifice at least double the size of the present exhibition building, so that if the six adjoining colonies only contribute in moderation, the aggregate collection of objects will be very large indeed, and will necessarily involve the erection of a new and very capacious building.

Exhibition of Polynesian Curiosities.—A collection of curiosities from some of the Polynesian islands, procured during a recent cruise of H.M.S. *Curaçoa*, have recently been exhibited in the Church Society's room, Philip-street, Sydney. In conjunction with the official purpose of his late cruise, Sir William Wiseman undertook to procure from those islands that could be conveniently visited specimens of their natural productions and of their manufactures, and the collection of curiosities obtained during the four months' cruise has surprised all who inspected it, as much on account of its size and completeness as of the beauty and rarity of many of the specimens. The exquisite plumage of the birds, and the beauty of the corals and shells in the South Sea Islands are well known; but though various specimens have occasionally been obtained, such an extensive and varied collection of them had not before been seen in Sydney. The proceeds of the exhibition, which has attracted a large number of visitors, are to be divided between the missions connected with the islands.

The Drought in Australia.—The accounts from all parts of the Western and South-Western interior were such as to cause gloomy forebodings. The Lachlan correspondent of a Sydney paper says:—"Go where he will, the traveller sees a burnt-up grassless wilderness, the dry beds of watercourses and lagoons, which have hitherto, and until of late, supplied one of the two great elements of life to our flocks and herds, and so far as animal life is concerned, abundant evidences of misery. The wildfowl of the interior, whose habit it is to eschew the haunt of men, are driven in by drought to quench their thirst at our rivers and the few remaining water-holes containing water which are left to us, and are actually growing tame. Aquatic birds, strangers in these parts in ordinary times and seasons, are now no longer so. Even the habits and haunts of the finny tribe are affected by the absence of rain and the scarcity of water. Although even swimming in hundreds through the transparent water, they decline the bait, and are almost impossible of capture. Several stations fronting tributary creeks of the Lachlan have been recently abandoned, the cattle being left to follow their own instincts."

Obituary.

John Dixon, of Darlington, civil engineer, died on the 10th October, 1865. His death is worthy of remark, as he was the oldest railway engineer of the day, having been the resident engineer on the Stockton and Darlington Railway under the celebrated George Stephenson when he made his first attempt at railway engineering; and it is singular, that after executing various railways in different parts of the kingdom, Mr. Dixon should return to Darlington to end his days as consulting engineer to the Stockton and Darlington Railway Company, in whose service he died, having been from 1820 to 1865 actively engaged in the construction and management of railways. He was born at Cockfield, near Raby Castle, Durham; his father was a colliery owner as well as a land-surveyor and colliery engineer; and from him he received that sound, practical, and scientific knowledge which was of especial service to him in after-life. It may be noticed that his grandfather's brother was selected by the Royal Society to go to Bencoolen, in Sumatra, to take observations of the transit of Venus across the sun's disc in 1761, and also to go to observe another transit of Venus at the Island of Hammerfest, near the North Cape, in 1769. When the question of making a communication between the Durham collieries and a port of shipment was under discussion, Mr. John Dixon was able to give some very useful information, having in his possession plans and sections which his grandfather, George Dixon, a man of scientific eminence in the county, had prepared about the year 1760, when he proposed canal communications with the collieries. When George Stephenson was consulted as to the construction of the Stockton and Darlington Railway, Mr. Dixon was engaged to show him the plans and levels in his possession, and to accompany him in examining the district; a strong friendship then sprung up between them which lasted through life. During the construction of that line Mr. Dixon remained at Darlington as Mr. Stephenson's resident engineer; and it was during this period that Mr. Stephenson's only son, the late Robert Stephenson, received from Mr. Dixon his first instruction in taking levels and surveys, and in setting out railway works. Mr. Dixon was George Stephenson's resident engineer on the Canterbury and Whitstable Railway, on which was constructed the first railway tunnel. He was resident engineer at the Manchester end of the Liverpool and Manchester Railway; and remained for some years after its completion in charge of the maintenance of way and works, and of the locomotives, a post of great responsibility; there being at that time no experience to guide engineers as to the relative durability of the different working parts of locomotive engines, or of the best modes of repair. After constructing the Birmingham and Derby, the Chester and Birkenhead, and the Carlisle and Whitehaven railways, he returned to Darlington in 1845, where he remained till his death. Mr. Dixon might, perhaps, have attained higher eminence, and have been more known to the public generally, had he been a man of more ambition; but his retiring nature led him at all times to shun publicity.

Publications Issued.

CHEMICAL HANDICRAFT: CLASSIFIED AND DESCRIPTIVE CATALOGUE OF CHEMICAL APPARATUS. By John Joseph Griffin, F.C.S. Demy 8vo. (*J. Griffin and Sons*, 22, *Garrick-street, Covent-garden.*)—This work, which is illustrated by sixteen hundred engravings on wood, is, in the main, a price current of chemical apparatus, but it is something more than that. If, indeed, its commercial character were separable, the residue of the work might fairly be considered a report on the apparatus which the philosophical chemist has at present at command, to aid his original researches, or to demonstrate the truth adduced in his teachings. In fact, much of the work is of the nature of a treatise on what is termed chemical manipulation. Under the heads of air pumps, lamps, furnaces, gas burners, blast furnaces, blowpipe apparatus, volumetric analysis, and in many other places, the reader will find the results of numerous original experiments. By a careful classification of the apparatus, and by the use of abundant figures and short descriptive notes, a considerable mass of information on practical points has been condensed into the work.

Notes.

RAILWAY CARRIAGES.—It appears that new carriages have been built in Milan to run upon the long line of railway from Susa to Brindisi, which is to convey the Indian mails and travellers from England. Some of these carriages are adapted for families or parties of friends. They are rather longer than the usual carriages, and divided into three compartments, communicating by sliding doors. There is the ante-room for servants, the sitting-room with four convenient sofas, upon each of which one person can sleep, a bedroom with a bed for two persons, washing apparatus, &c., while in the daytime the travellers can walk up and down through the three compartments.

STEAM HOIST.—The *Builder* says that at the Newark Castle Wharf a steam hoist (without any engine), made at the Trent Iron Works, has been successfully tried. A timber frame, forming the base of the machine, encloses a large cylinder. On the steam being admitted to it, a beam of iron, armed with strong teeth, is forced out, and from this motion is given through a simple arrangement of wheels, which causes the chain barrel to revolve. The direct action of steam is thus brought into use without the intervention of a steam-engine, as in ordinary steam cranes. The working is easy, and without noise. This particular machine was designed for raising building materials at some of the large iron furnaces now being constructed in the North of England. A Mr. Nicholson is the inventor.

SUICIDE IN FRANCE.—The extraordinary increase in the number of suicides in France is one of the saddest and most inexplicable facts in the social history of the present century. The progress of self-destruction exhibits a frightful rapidity, which seems to have become almost a law during the past forty years. Mercier, in his *Tableau de Paris*, estimated the number of suicides in 1783 at 150; Dr. Brouc established the average of the years 1794 to 1804 to be 167, and that of the years 1814 to 1823 at 334. There is no doubt that the estimates, especially the earlier ones, are somewhat questionable; statistics had not then received the attention which has since been given to them, and facts were not recorded with the same care that they are in the present day. More recent returns, however, may be taken as accurate, and the following is the account given by M. Legoyt of the suicides which occurred between 1826 and 1861:—

	Annual Average.	Proportion per million of Inhabitants.
1827 to 1830	1,739	54
1831 to 1835	2,119	64
1836 to 1840	2,574	76
1841 to 1845	2,951	85
1846 to 1850	3,446	97
1851 to 1855	3,639	100
1856 to 1860	4,001	110

By this table it appears that the annual number of suicides has nearly doubled in a quarter of a century. It will be seen, however, that the ratio of increase has diminished from twenty to ten per cent. per annum. The relative extent of the evil may be illustrated by the fact that while the suicides in France amounted to 4,000 per annum during the last period given above, those in England and Wales, in 1861, amounted, according to the inquest returns, to 1,327, or about 66 per million of inhabitants against 110 in France. Earnest attempts have been made in France to ascertain the cause of this frightful increase in self-destruction, but without any satisfactory result. As regards the circumstances leading to suicide, the following is the result of the examination of 1,415 cases:—Misery, 185; weakness of mind, hypochondriasis, &c., 185; intemperance, 173; severe misfortunes, 133; embarrassment or reverses, 106; domestic unhappiness, 98; *ennui* and disgust of life, 97; misconduct, 93; insanity, 89; incurable diseases, 65; idleness, 38; remorse and dread of dishonour, 34; blighted or disappointed affections, 33; want of work, 28; gaming, 21; jealousy, 16; doubtful motives, 14; inordinate pride, 6; and delirium, 1. Another examination of 4,285 cases gives the following result:—126 who committed suicide were rich; 571 in easy circumstances; 2,000 gaining sufficient for their support; 256 in difficulties; 159 ruined; 709 poor; and 464 only in absolute misery; by which it appears that in more than three-fifths of the cases referred to want was not the immediate cause of suicide. The result, as regards education, is equally unsatisfactory. Out of 3,086 suicides, 573 are reported as well educated; 789, sufficiently educated; 1,659, poorly educated; 3, very poorly educated; 65, totally ignorant. Thus the total y gnorant, it will be seen, were a very small minority. Moral character affords no better safeguard it would seem against suicide than education, for out of 4,595 cases, we are told, 1,945 were by persons whose character is described as good, 1,196 as unknown, and 1,454 notoriously bad. Of the last, 780 are declared to have been drunkards, 410 as having led a disreputable life, 170 as guilty of adultery, 50 as gamesters, and 44 had committed robbery. The greater number of suicides occur between the ages of 20 and 50, and instances of youths committing self-destruction are, as might be expected, much more rare than those of old men. In 1854 a Russian peasant of Mohilow is reported to have hung himself at the age of 120! There is but one inference that can safely be drawn from the above facts relative to suicide in France, namely, that poverty is not the most common cause any more than ignorance, but the indulgence of the passions and the effect of imagination on weak minds.

Archæological Museum at Athens.—A Museum of antiquities is about to be established on the classic soil of Athens. The Greek Government has granted a spot of ground for the purpose on the hill of Saint Athanasius, and has approved the plans for the building submitted by Professor Lange, of Munich. Every true lover of art must rejoice at the establishment of a museum to receive the artistic and antiquarian relics which are constantly being brought to light in the neighbourhood of the capital of ancient and modern Greece. It is said that a Russian merchant, resident in Greece (M. Bernarkiski) has given a sum equal to eight thousand pounds towards the accomplishment of the object in view, and has promised another subscription of the same amount when the works are actually commenced. Many other connoisseurs have followed M. Bernarkiski's example, and thus the scheme, which has lain dormant many years for want of funds, is now likely to be carried out without delay.

The French Dead-Letter Office.—The post-office of a great city is naturally the scene of a greater mass of curious errors than can be found in almost any other establishment. The Director-General of the French post tells us that the errors committed by the officials of his department amount to 1½ per cent. per thousand on the whole correspondence; but many of these mistakes arise out of the carelessness or bad writing of the senders—for instance, letters addressed to the Rue du Havre, Rue de Londres, Rue d'Amsterdam, without the word Paris, and often with the small letter *r* to represent the word *rue*, are sent to Havre, London, or Amsterdam, and only arrive at their proper destination after much trouble and loss of time. The errors committed by the public are much more numerous, and in 1849 the number of letters which reached the dead-letter office amounted to nearly four millions and a-half. The improvements which have been made in the department have, however, now reduced that annual total to little more than two millions, of which three quarters consist of letters refused by those to whom they were addressed, rather more than one quarter of letters addressed to persons unknown, of a hundred thousand incompletely addressed, and of more than a thousand (or about three per diem) posted without any address at all. The Director-General has adopted one means of reducing the number of errors which, from its truly radical character, deserves to be mentioned—it consists in an appeal to the masters of all the public schools to make the distinct and careful addressing of letters one of the items in education. In fact, the Government has adopted the suggestion, and now the method of folding and addressing letters is taught in all the commercial schools of France; and, as in the rural districts the young act as the secretaries of their uneducated elders, the improvement marches rapidly. Some of the errors recounted are very curious; for instance, a letter was posted in Paris with the address, "To M. Bernard Sultan crète—Mediterranean." It was sent to every port in the Mediterranean, voyaging backwards and forwards for many weeks, but arriving at last at the Dead-letter Office, an ingenious official suggested that it was intended for M. Bernard, of the ship *Tancrède (Sur le Tancrède)*, in the Mediterranean, and so it turned out. One of the oddest addresses was that affixed by a German who had visited Lyons; he wrote to a person in that town, and having forgotten not only the number of the house but also the name of the street, he addressed the cover, "To M———, who lives in the house near which there is a heap of snow." The letter was returned to the writer, who said it was addressed well enough, only the post-office people had taken it to Lyons in summer instead of in winter. Such a case as this proves the good sense of M. Vandal, the Director-General of the French Post-office, in calling the school-master to his aid.

Public Charity in Paris.—A return has recently appeared of the amount expended by the administration of public charity during the year 1863. The gross total expended was nearly twenty-four millions of francs, or rather less than half a million sterling. Of this sum about one-fifth was employed in dispensing relief in the homes of the poor, and the remainder for the hospitals, asylums, and the expenses of the central administration. The number of persons who received out-of-door relief in the year in question was 101,570, of whom 21,863 were men, 35,432 women, and the remainder children, forming in all little more than forty thousand families. The proportion of indigent in relation to the total population of the city was one to sixteen and a half. The average amount bestowed upon each family relieved was 85 francs, and that on each individual 33 francs. There are no poor houses or poor rates in Paris, but charitable committees exist in each of the arrondissements of the city, and contributions are solicited and collected from house to house. The expenses of the hospitals and asylums form a part of the regular budget of the municipality, aided by the state. There exist also many special charitable institutions, amongst which the *Orphelinat du Prince Imperial* is conspicuous. This establishment was founded immediately after the birth of the young prince, and has to the present time received and brought up 430 orphan boys. When old enough, and educated to a certain point, the boys are placed out in families to learn a trade; and a sum, which averages about ten pounds a year, is allowed from the funds of the establishment to the boy's master until the apprenticeship is terminated; the surveillance of the institution continues in any case until the orphan has attained the age of twenty-one. A large proportion of the orphans choose the trades of jewellers, cabinet makers, and locksmiths, and a certain number enter the army. The total annual expense of the establishment is about two thousand pounds, or 50,000 francs, towards which the Emperor subscribes 30,000, and the city of Paris 2,000; the special contributions received last year included one of 50,000 francs by the Marquis d'Audigné de Marcé and four others, ranging from a gift of one thousand francs to an annual sum of six hundred francs; and the smaller contributions make up a sum of about 7,500 francs a year. The number of orphans now learning trades and aided by the institution is more than two hundred.

Public Education of the Cossacks.—During the last few years great efforts have been made to improve the intellectual condition of the Cossacks, which eight years ago was most deplorable. In 1858 there were only 2,384 pupils in the schools amidst a population of 896,870 Don Cossacks, or one pupil for 380 inhabitants; in 1864 so much improvement had taken place that the ratio had reached to one pupil for every 74 of the population. The proportions given for the other tribes, for the last-named year, are as follow:—The Cossacks of the Kouban and of the Torek counted 5,077 at school, being in the ratio of one to 100; the Cossacks of Orenbourg, 4,216, or one to 56 inhabitants; those of the Ural, 1,346, or one to 69; those of Western Siberia, 1,842, or one to 59; and those of Eastern Siberia, 1,954, or one to 82 inhabitants.

Correspondence.

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Management of Ships' Boats.—Sir,—Although I was present at the reading of the paper by Mr. Gray, on the 21st Feb., I did not take part in the discussion, because the particulars of my facts and dates had for the moment escaped my recollection. The following is extracted from a lecture delivered by me in this Institution in 1859. A paper on the same subject was read before the Society of Arts (*Journal*, vol. i., p. 169).—"About five years ago I was casually lounging through the docks at Liverpool, and conversing with one of the sailors belonging to one of the numerous steam-ships, I pointed out to him the improper manner in which the boats were secured, and cautioned him that inattention to apparently such small particulars might one day cost many lives. Within six months that day did come, and those boats were useless. In the evidence that was afterwards taken on the subject, it was proved that they were carried down with the ship, when she sank, and were not disengaged from her till sixteen hours after the accident. Many lives were lost." Surely, better than legislation—than certificates to shelter themselves behind—would be to punish the Captain with some months on the treadmill, and the owner by a heavy deodand on the ship.—I am, &c., Wm. Stirling Lacon.

Royal United Service Institution, Feb. 23, 1866.

Ships' Boats.—Sir,—The present agitation for the safety of life-boats in cases of shipwreck at sea, makes me ask how it has happened that the collapsible boats constructed by Mr. Berthon have been entirely overlooked for so many years. His boats fold longitudinally, and four of them can be stowed in the space required for one of the ordinary construction. They are beautifully shaped for sailing, and are unsinkable, even with a few holes in the bottom. They are lowered from the ship's side in their collapsed state, and on touching the water open out spontaneously, fit for the crew to jump in. They are provided with an inner and an outer skin of vulcanized india-rubber, enclosing air-spaces throughout the entire length, divided into many separate compartments. These boats do not discharge their water, but their floating powers are so great that that quality is not of much importance, and might readily be added. Mr. Berthon has constructed several, one fit to carry a hundred men in any sea, at his own expense. During one of his exhibitions I asked that gentleman if he had laid his plans before the Board of Admiralty. "O yes," he replied, "and the answer I got was, that the Royal Navy was not allowed to carry life-boats, because all the men would desert in them;" they referred him to the merchant service. The shipowners were applied to, and told him that they would use them if compelled to do so by Act of Parliament, but not otherwise, unless he could build them cheaper than their ordinary boats; also that it was not the custom in the merchant service to make any preparations for the mere saving of life, unless compelled to do so by the legislature. Mr. Berthon's india-rubber skin is of a peculiar kind, made of successive layers of coarse calico cemented with rubber, passed through warm rollers, and afterwards vulcanized in a superior manner. The skin of his large boats is three-quarters of an inch in thickness, and as flexible in proportion as glove-leather.—I am, &c., Henry W. Reveley.

Fixed Watertight Bulkheads.—Sir,—The employment of watertight bulkheads in English ships was introduced by Captain Schenk, in 1792. They were used in 1794 by the late Sir Samuel Bentham, in four ships built on his plans for the Royal Navy. A description of fixed bulkheads will be found in the *Mechanics' Magazine* for 1826. Mr. C. Wye Williams claims the first employment of them in steam ships.—I am, &c., C. F. T. Young.

MEETINGS FOR THE ENSUING WEEK.

Mon......Medical, 8. Clinical Discussion. Cases by the President and others. Paper by Mr. De Meric, "On the Use of Mercury in Syphilis."
Asiatic, 3.
R. United Service Inst., 8½.
Society of Engineers, 7. Adjourned Discussion on Mr. Wessely's paper, "On Arched Roofs."
Tues ...Civil Engineers, 8. Discussion upon "The Hydraulic Lift Graving Dock;" and, time permitting, Mr. R. Price Williams, "On the Maintenance and Renewal of Permanent Way."
Statistical, 8. Mr. Samuel Brown, "On the Statistical Progress of the Kingdom of Italy."
Pathological, 8.
Anthropological, 8.
Royal Inst., 3. Professor Frankland, "On the non-metallic elements."
Royal Horticultural, 3. Scientific Meeting.
Wed.....Society of Arts, 8. Prof. Leone Levi, "On Deer Forests and Highland Agriculture in relation to the Supply of Meat."
Meteorological, 7.
Geological, 8. 1. Mr. W. Boyd Dawkins, "On the Fossil British Oxen. Part I. *Bos Urus*, Cæsar." 2. Mr. T. M'K. Hughes, "Note on the Junction of the Thanet Sand and the Chalk." 3. Mr. W. Whitaker, "On the Kentish Tertiaries."
London Institution, 7.
R. Society of Literature, 8½.
Archæological Assoc., 8½.
Thurs...Royal, 8½.
Antiquaries, 8½.
Zoological, 4.
Philosophical Club, 6.
Royal Inst., 3. Professor Frankland, "On the non-metallic elements."
Inst. of Naval Architects, 12. Evening Meeting, 7.
Fri ......Royal Inst., 8. Dr. Bence Jones, F.R.S., "On the Existence in the Textures of Animals of a fluorescent substance closely resembling Quinine."
Inst. of Naval Architects, 12. Evening Meeting, 7.
Sat.......Royal Botanic, 3¾.
Royal Inst., 3. Rev. G. Henslow, M.A., "On Structural and Systematic Botany."
Inst. of Naval Architects, 12.

PARLIAMENTARY REPORTS.

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SESSIONAL PRINTED PAPERS.

Par. Numb.

Delivered on 1st March, 1866.

33. Bills—Vaccination.
39. ,, Turnpike Roads.
35. ,, Public Companies.
42. ,, Princess Helena's Annuity.
43. ,, Prince Alfred's Annuity.
44. ,, Public Libraries Act Amendment.
15. (101 to 114) Railway and Canal, &c., Bills—Board of Trade Reports.
63. (I.) Committee of Selection—Second Report.
0·22. Representation of the People Bills—Bills relating to Parliamentary Representation, dated 12th February, 1852; 16th February, 1854; 28th February, 1859; and 1st March, 1860.

Delivered on 2nd March, 1866.

4. (II.) Cattle Plague—Order in Council.
15. (115 to 124 and 126 to 132) Railway and Canal, &c., Bills—Board of Trade Reports.
20. East India (Electric Telegraphs)—Return.
22. Ecclesiastical Appeals (Privy Council)—Return.
73. Cattle and Sheep Importation (Ireland)—Orders.
74. Duchy of Cornwall (1865)—Account.
80. Admiralty—Return.

Delivered on 3rd March, 1866.

19. Bills—Court of Chancery (Ireland).
45. ,, Entail (Scotland).
15. (133 to 149 and 175) Railway and Canal, &c., Bills—Board of Trade Reports.
25. Sheffield Reservoirs—Report.
59. Army (Hong Kong and Kowloon)—Return.
72. Prisons Act—Letters.
81. Parliamentary Boroughs—Return.

Session, 1865.

442. (A VIII.) Foor Rates and Pauperism—Return (A.) (December 1864 and 1865).

Delivered on 5th March, 1866.

51. Revenue Departments and Post-office Packet Service—Estimates.
63. (II.) Committee of Selection—Third Report.
Manufactures, Commerce, &c.—Reports of Secretaries of Embassy, &c., No. 12.

Session, 1865.

447. Local Taxation Returns—Return.
477. Income Tax (Annual Values, &c.)—Return.

Delivered on 6th March, 1866.

30. Bills—Church Rates Commutation (No. 2).
48. ,, Prince Alfred's Annuity—Amended in Committee.
15. (150 to 160, 176, 177, 206 and 207) Railway and Canal, &c., Bills—Board of Trade Reports.
58. Mortality in Troops (China and Japan)—Correspondence.
60. Army (Hong Kong)—Return.
70. Bankruptcy—Return.
84. University and National Education (Ireland)—Memorials.

Delivered on 7th March, 1866.

15. (161 to 174 and 178) Railway and Canal, &c., Bills—Board of Trade Reports.
37. National Debt (Savings Banks and Friendly Societies)—Annual Account.
56. The *Duncan Dunbar* and *Barbadienne*—Report and Evidence made to the Board of Trade.
66. Bradford Reservoirs—Correspondence.
90. Civil Services—Estimate "on Account."

Public General Acts—Caps. III. and IV.

Delivered on 8th March, 1866.

18. Bill—Common Law Courts (Ireland).
46. ,, Exchequer Bills and Bonds.
47. ,, County Courts.
49. ,, Colonial Governors (Retiring Pensions) Act Amendment.
15. (179 to 189) Railway and Canal, &c., Bills—Board of Trade Reports.
68. (I.) Trade and Navigation Accounts (31st January, 1866).
63. (III.) Committee of Selection—Fourth Report.
77. Election Petitions—Returns.
82. Bullion—Return.
85. Small Livings—Memorial.
92. Military Reserve Funds—Accounts.

Session, 1864.

577. (III.) Taxes in Europe—Returns.

Delivered on 9th March, 1866.

52. Bills—Superannuations (Officers, Metropolitan Vestries, and District Boards).
54. ,, Capital Punishments within Prisons.
15. (190 to 200) Railway and Canal, &c., Bills—Board of Trade Reports.
33. Navy—Statement of Savings and Deficiencies.
75. Steamers—Report of the Commissioners of Her Majesty's Customs.
91. Education—Return.

Delivered on 10th March, 1866.

55. Bills—Cattle Plague (as amended by the Lords).
56. ,, Sheriff Court Houses (Scotland) Act (1860) Amendment.
13. East India (Bhootan)—Further Papers.
15. (201 to 205, and 208 to 212) Railway and Canal, &c., Bills—Board of Trade Reports.
71. Metropolitan Improvements—Statement.
83. Customs' Clerks (London)—Treasury Minute.
97. Devonport Election—Report.

Savings Banks—Returns.

Electoral Returns (1865-66).

Patents.

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From Commissioners of Patents' Journal, March 9th.

GRANTS OF PROVISIONAL PROTECTION.

Alcoholic liquids—615—H. A. Dufrené.

Artificial heat, obtaining—447—S. Marland, W. H. Smith, & W. Wells.

Billiard cues, clip for fastening tips to—609—J. Hick.

Binocular microscopes—581—P. H. Lealand.

Carriages with folding heads—404—J. Rock, jun.

China and India grasses, treatment of—357—P. A. Godefroy and J. W. Mott.

Confectionery—500—W. and J. W. Wood.

Copying presses—438—C. Arnaud.

Distillers' grains, treatment of—565—R. Milburn and W. H. Baxter.

Driving belts—583—F. L. and C. L. Hancock.

Elastic fabrics—551—N. Legendre.

Electric clocks—549—H. Bright.

Fabrics, producing designs in colour upon—511—J. Greenhalgh.

Fibrous materials for spinning, preparing—559—W. Tongue.

Fibrous substances, rollers for spinning—516—P. Smith, sen.

Fibrous substances, top rollers used in spinning—400—J. Sutcliffe.

Fire-arms, breech-loading—593—S. Rydbeck.

Fountains—544—W. D. Napier.

Gas—444—M. R. Leverson.

Gas and air engines—434—C. D. Abel.

Gas meter indexes—585—J. Thomas.

Gas producers, economizing the heat of—497—W. Clay.

Harvesting and mowing machine, a double-action—528—W. M. Wells.

Hoisting and pressing—476—E. T. Hughes.

Ice, making—613—J. Norman and J. Copeland.

Ice, producing—540—B. W. Richardson.

Inflammatory diseases, vacuum apparatus used in—414—V. T. Junod.

Lace fabrics, cutting—597—C. G. Hill.

Lamps and gas burners—619—R. Clark.

Land, cultivating—567—N. Fisher.

Lathes, &c., used by potters, driving—547—E. Leak.

Linen yarn, preparing—488—C. Mather.

Looms, shuttle motion for—2836—F. Tolhausen.

Metallic plates for printing, production of—449—C. Gilpin.

Metals, casting—611—R. A. Brooman.

Metals, rolling—579—F. C. and C. E. Winby.

Motive power, obtaining—557—J. Parker.

Oil from bituminous substances, making—603—H. Robertson.

Peat fuel—545—J. D. Brunton.

Pocket rules—534—W. R. Lake.

Posts—514—M. A. Muir and J. McIlwham.

Printing—496—P. E. Placet.

Railways—575—G. Haseltine.

Railways, signalling on—587—J. Pickin and R. Bailey.

Railways, signals for—595—W. P. Le'Keux and F. A. Wishart.

Railway trains by signals, protecting—512—J. Smith.

Railway wheels—526—C. E. and F. C. Winby.

Reeds and combs, elastic—555—J. Pass.

Roads and streets—591—J. H. Johnson.

Rotary motion in reciprocating motion, converting—508—H. Willis and G. Rice.

Rudders—502—A. H. Linnington.

Ships of war, building—569—J. S. Russell.

Shutters, revolving—601—J. H. Forshaw.

Skates—2790—F. Tolhausen.

Spirit meter—561—J. F. Hearsey.

Stamping or embossing presses—423—J. Pinches.

Steam boilers, preventing incrustation in—484—P. Ward.

Steam engines—563—T. J. Smith.

Steam engines, a tubular slide valve for—607—J. Trent.

Steam, generating superheated—486—A. V. Newton.

Stop cocks—536—L. Brown, W. Wheeldon, and G. N. W. T. Thompson.

Surfaces, etching and engraving—571—R. Leake and J. Beckett.

Tan, &c., extracting—617—W. E. Newton.

Textile fabrics—432—R. Wolstenholme and R. G. Rodgers.

Textile fabrics, applying size to—386—J. Townsend.

Trusses—522—G. and D. Hill.

Tubes and hollow cylinders—538—W. Webb.

Tubular boilers—532—H. A. Bonneville.

Valves—504—J. Fletcher.

Vehicles—492—W. E. Gedge.

Water meters—520—T. Kennedy.

Weaving, looms for—542—J. Smalley.

PATENTS SEALED.

2324. C. T. Burgess.
2345. F. W. Prince.
2347. D. and J. Hyam.
2350. T. and T. L. G. Bell.
2351. G. P. Harding.
2368. J. K. Hoyt.
2388. J. C. Broadbent.
2398. W. Porter.
2415. A. Bird.
2424. A. Schultz.
2451. E. Brooke, jun.
2760. J. Johnson.
2903. W. E. Newton.
2949. O. Sarony.

From Commissioners of Patents' Journal, March 13th.

PATENTS SEALED.

2352. I. Beamish.
2358. J. Whitehouse.
2360. R. A. Brooman.
2362. S. Myers.
2372. W. Esson.
2390. I. S. McDougall.
2392. J. Gillespie.
2394. J. H. Johnson.
2427. P. Spence.
2433. G. Davies.
2443. M. Schaffner.
2444. J. Player.
2550. R. Tonge.
2578. J. Cunningham.
2644. G. Marshall.
2651. G. A. Ermen.
3066. G. T. Bousfield.
3305. J. W. Blackman.
257. F. L. Roux.

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

652. W. Inglis.
770. G. Davies.
651. C. H. Lea.
687. J. H. Johnson.
779. J. H. Worrall.
666. H. Wilson.
667. W. Wood.
673. W. Rossetter.
688. W. Smith.
697. W. Young.
674. F. Buser-Kraushaar.
727. B. Wren.

PATENTS ON WHICH THE STAMP DUTY OF £100 HAS BEEN PAID.

830. A. Paget.
642. A. Tylor.

Registered Designs.

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Perimeter Riding Habit Skirt—February 15—4773—H. Creed and Co., Conduit-street, Bond-street, W.

Safety Bolt and Strike Plate—February 17—4774—W. Perkin, Willenhall.

Dash or Beater for Washing Machines—February 21—4775—Harper Twelvetrees (Limited), Bromley-by-Bow.

Capsule for a Bottle—February 27—4776—W. Gilbey, Oxford-street, W.

Union Coupling Socket—March 7—4777—H. Middleton, Liverpool.

Steam Engine Framing—March 10—4778—W. Inglis, 97, Bridge-street, Manchester.

The Skeleton Glove—March 13—4779—Brett and Whale, 30, Edward-square, Caledonian-road.